

## Chapter 2

# ALTERNATIVES

This chapter describes the process used to develop the alternatives, describes those alternatives considered and rejected, and provides a narrative and tabular comparison of the alternatives considered. Additionally, a table at the end of the chapter (table 2.10) summarizes the effects of the alternatives on the resources of the study area.

## I. Development of Alternatives

This section presents a brief history of negotiations for proposed TROA and a description of the process used to develop alternatives.

### A. History of Negotiations

Use of Truckee River water has been in dispute for more than a century, beginning with the construction of a dam across the outlet of Lake Tahoe in 1870. (See chapter 1, Section V. A., “History of Reservoir and River Operations.”) The Washoe Project Feasibility Report by the Bureau of Reclamation (Reclamation) in 1954 stimulated negotiations to allocate use of Truckee River water between Nevada and California. In 1955, the California-Nevada Interstate Compact Commission, with representatives from California, Nevada, and United States, was formed to develop an interstate allocation. Ten years of negotiations, which were expanded to include the waters of the Carson and Walker Rivers, produced a draft Interstate Compact (Compact).<sup>1</sup> Ultimately, the State legislatures passed legislation adopting the draft Compact, but it was never ratified by the Congress.

The latest effort to resolve the water issues and to provide for future demands was the passage by the Congress of Public Law (P.L.) 101-618 in 1990. Many parties—public agencies, water users, and environmental groups—participated in developing that legislation. (See chapter 1, Section V. A., “History of Reservoir and River Operations.”) In addition to many other water use issues, P.L. 101-618 addresses the Preliminary Settlement Agreement as Modified by the Ratification Agreement (PSA) and the draft Compact ratified by Nevada and California in the early 1970s.

On December 10, 1990, the Department of the Interior (Interior) conducted an organizational meeting to discuss its obligations and responsibilities—timing, direction, organization, coordination, and cooperation—for implementing P.L. 101-618, including negotiation of TROA. That meeting was widely announced and well attended; a number

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<sup>1</sup> California-Nevada Interstate Compact, California Water Code Sec. 5976 and Nev. Rev. Stat. Sec. 538.600 (as ratified and approved by the legislature of both States, but not consented to by Congress).

of agencies, governments, and organizations, including the five mandatory signatories to TROA (United States, California, Nevada, Pyramid Lake Paiute Tribe of Indians [Pyramid Tribe], and Sierra Pacific Power Company [Sierra Pacific]<sup>2</sup>), were represented. On February 20-21, 1991, Interior conducted the first of many working meetings to “draft a management plan for the preparation of the Truckee River Operating Agreement over the next 3 or 4 years.” In addition to the five mandatory signatories, eight other negotiating parties (for a total of 13) were identified to participate in this process. Invitations were also extended to interested parties to attend as observers. The 13 negotiators were:

- United States (Departments of the Interior and Justice)
- Nevada
- California
- Pyramid Tribe
- Sierra Pacific
- Washoe County, Nevada
- Reno, Nevada
- Sparks, Nevada
- Washoe County Water Conservation District
- Fernley, Nevada
- Truckee-Carson Irrigation District (TCID)
- Churchill County, Nevada
- Fallon Paiute-Shoshone Tribes

TCID, Churchill County, and the Fallon Paiute-Shoshone Tribe did not continue to participate in the negotiations. Since 1991, Carson-Truckee Water Conservancy District, Truckee Donner Public Utility District, Sierra Valley Water Company, and North Tahoe Public Utility District have joined the negotiations. This group of 14 parties negotiated the terms of the proposed Negotiated Agreement (hereafter simply referred to as Negotiated Agreement).

Numerous negotiating sessions, technical meetings, drafting sessions, and public plenary meetings have been conducted in the 17 years since the first meeting, and a number of public and private interest groups from Nevada and California have participated in the negotiation process as observers and commentators. In May 1996, the parties completed a Draft Agreement, and Interior and California jointly issued a draft environmental impact statement/environmental impact report (DEIS/EIR) for that Draft Agreement in February 1998. Negotiations resumed in 1999 to address a number of new issues that had emerged since 1996. This second set of negotiations, completed in October 2003, resulted in another Draft Agreement that was substantially different from the May 1996

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<sup>2</sup> Truckee Meadows Water Authority (TMWA) is the successor to Sierra Pacific, one of the original mandatory signatories of TROA. See chapter 1 for more information about Sierra Pacific selling its water company to TMWA.

version. As a result, a decision was made to prepare an environmental analysis of the October 2003 Draft Agreement. A revised DEIS/EIR was released in August 2004. This final EIS/EIR evaluates the Negotiated Agreement, which contains many of the same provisions as the October 2003 Draft Agreement. (Exhibit A in the attachment to chapter 2 presents highlighted changes to the October Draft Agreement.)

## **B. Development Process for the TROA Alternative**

Current Truckee River reservoir operations (Section I, “Affected Environment” in “Surface Water” in chapter 3 describes current conditions) are not sufficiently flexible to serve future Truckee Meadows municipal and industrial (M&I) drought demand and to enhance riverine habitat for Pyramid Lake fishes. Therefore, easing or removing operational restrictions to increase flexibility was central to developing TROA.

During the negotiation process, several alternatives for increasing operational flexibility and efficiency of existing reservoirs in the Lake Tahoe and Truckee River basins were developed, evaluated, and submitted to the negotiators for consideration. (See Section V, “Alternatives Considered and Rejected,” in this chapter.) As each alternative was considered, elements of the alternative that were acceptable to the negotiators became part of the proposed agreement, and those not acceptable to the negotiators were rejected.

The process of developing alternatives began in 1992, concurrent with negotiations. The initial intent of the negotiators was to develop and analyze a range of reasonable alternatives for the EIS/EIR, assuming the negotiated agreement would fall within that range.

By 1994, the alternatives being considered gave priority to specific issues identified through the scoping process or negotiations, as follows:

- Enhancements for endangered and threatened species
- Enhancements for general fish and wildlife resources
- Maintenance of recreational pools in reservoirs
- Storage of California’s surface water
- Water supply for drought relief in Nevada

The negotiators explored these thematic alternatives to determine if elements of any of these might reasonably fit into an agreement framework. In 1995, the negotiators began to evaluate the potential effects of these alternatives in light of water rights, storage, and streamflow.

Analysis of these thematic alternatives was presented in the Report to the Negotiators. Distributed to the negotiators in January 1996, the report followed the format of an EIS/EIR (summarized in “Alternatives Considered and Rejected”).

In reviewing the Report to the Negotiators, and through subsequent negotiations, the negotiators concluded that many identified water management goals could be achieved only by providing flexibility to allow exchanges and transfers of water among reservoirs. In most cases, the objective of an alternative could not be fully achieved unless the negotiators agreed on cooperative management measures, including relinquishing control of timing of water releases. This conclusion led to negotiations on topics such as exchange procedures, including mandatory exchanges, priorities for exchanges, and accounting.

The Report to the Negotiators brought recognition that the proposed agreement should, to the extent possible, incorporate the thematic issues that had previously been described in separate alternatives. The negotiation process then began to separate those elements that could be agreed upon and made part of the agreement from those that could not be agreed to by one or more of the negotiators for the mandatory signatories and were, therefore, dropped from further consideration. As a result of negotiations, alternatives discussed in the Report to the Negotiators were eliminated from consideration in a DEIS/EIR because they did not meet the requirements of P.L. 101-618.

A DEIS/EIR was published for public review and comment in 1998. Negotiations since that time have resulted in a number of changes to the May 1996 version to produce the October 2003 Draft Agreement; also, another action alternative was developed. To serve the purposes of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), a revised DEIS/EIR was published for public review and comment in 2004.

### **C. Alternatives Considered**

Three alternatives, based on projected future conditions when TROA is anticipated to be fully implemented (the year 2033), are evaluated in this final EIS: No Action Alternative (No Action), Local Water Supply Alternative (LWSA), and TROA Alternative (TROA). Potential effects of the action alternatives are compared to No Action as well as to current conditions (chapter 3). Current conditions are not adequate to serve future demands.

Adoption and implementation of the Negotiated Agreement is the proposed action. Without adoption of the Negotiated Agreement, operation of all reservoirs under No Action or LWSA would continue to be the same as under current conditions. LWSA is an action alternative similar to No Action but with additional water supply options that may be authorized by local government agencies. Table 2.1 provides a comparison of water management provisions among the alternatives.

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letters and titles] under  
Sections II. No Action, III. LWSA, and IV. TROA in this chapter)**

Text sections	No Action	LWSA	TROA
<b>A. Overview</b>			
	See No Action	See LWSA	See TROA
<b>B. Interstate allocation</b>			
Interstate Allocation of Truckee River and Lake Tahoe	1. Though not in effect without Federal approval, States would probably abide by the allocation of the draft Compact	1. Same as No Action	1. Truckee River and Lake Tahoe allocation between California and Nevada fully executed as provided in P.L. 101-618
	2. Continue moratorium or policy equivalent on issuing new surface water rights in California	2. Approval of some pending surface water rights applications in California	2. Approval of some pending surface water rights applications in California
			3. Establishes well drilling criteria for upper Truckee River basin
<b>C. Water operations and facilities</b>			
<b>1. Water categories</b>			
Water categories	Project Waters, Newlands Project Credit Storage (NPCS), and Private Water	Same as No Action	Credit Waters in addition to those under No Action
<b>2. Floriston Rates</b>			
Floriston Rates	As required by <i>Truckee River General Electric</i> and <i>Orr Ditch</i> decrees – may be reduced to serve <i>Orr Ditch</i> decree water rights during drought	Same as No Action	Floriston Rate Water could be retained in storage to accumulate Credit Water or used to maintain Floriston Rates
<b>3. Reservoir operations</b>			
Project Water and Private Water operations (storage and release priorities)	Same as current operations	Same as No Action	Most Project Water (includes Private Water by definition) operations would continue, except some Credit Water operations could change Stampede and Prosser Project Water operations
Newlands Project Credit Storage (NPCS) operations	Same as current operations	Same as No Action	Expands Newlands Project Credit Water (includes NPCS by definition) operations and storage locations

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
Sections II. No Action, III. LWSA, and IV. TROA in this chapter) – continued**

Text sections	No Action	LWSA	TROA
Flood control and dam safety	Same as current operations	Same as No Action	Same as No Action
<b>a. Accumulation, storage, and release</b>			
<b>i. Lake Tahoe and Boca Reservoir</b>			
Lake Tahoe and Boca Reservoir operations	Store and release Floriston Rate Water for maintenance of Floriston Rates in accordance with Truckee River Agreement (TRA) and <i>Truckee River General Electric</i> decree	Same as No Action	Floriston Rate Water could be retained in storage to accumulate Credit Water or used to maintain Floriston Rates
<b>ii. Donner Lake</b>			
Private Water operations	TMWA and TCID operate in accordance with the 1943 Donner Lake Indenture and dam safety	Same as No Action	Similar to No Action, except TMWA Private Water could be used to create M&I Credit Water
<b>iii. Prosser Creek Reservoir</b>			
Store and exchange Tahoe-Prosser Exchange Water for minimum releases from Lake Tahoe	According to TPEA	Same as No Action	Elements of Tahoe-Prosser Exchange Agreement (TPEA) retained, but Credit Water releases would reduce the need for TPEA exchange water
Use Prosser Project Water for minimum reservoir releases and Pyramid Lake fishes consistent with the Endangered Species Act of 1973, as amended (ESA)	Yes	Same as No Action	Expands maintenance of minimum releases and continues use of water for Pyramid Lake fishes, even if they are no longer listed
9,800 acre-feet of Prosser Project Water retained in storage until following year	Reserved for possible TPEA exchange during following year	Same as No Action	Credit Water reserved in lieu of Prosser Project Water for TPEA exchange the following year and could be drawn down to 5,000 acre-feet in the fall
<b>iv. Independence Lake</b>			
Store and release Private Water	To serve immediate M&I demand	Same as No Action	TMWA could create M&I Credit Water or serve immediate M&I demand

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
Sections II. No Action, III. LWSA, and IV. TROA in this chapter) – continued**

Text sections	No Action	LWSA	TROA
Store and release Fish Water, Fish Credit Water, and Joint Program Fish Credit Water	No	No	Provide spawning access for Independence Lake Lahontan cutthroat trout (LCT) by maintaining lake elevation
<b>v. Stampede Reservoir</b>			
Storage permit	126,000 acre-feet of Fish Water may be accumulated annually	Same as No Action	Supports permit to allow additional Fish Water to be stored in available space (up to 100,000 acre-feet) as Fish Credit Water
Stampede Project Water used for Pyramid Lake fishes consistent with ESA and U.S. District court ruling	Yes	Same as No Action	Stampede Project Water used for Pyramid Lake fishes even if de-listed under ESA, but would be junior in priority to a few Credit Water operations
Interim Storage Agreement	Continue for duration of agreement	Same as No Action	Terminated
Hydroelectric power generation	Incidental to reservoir release	Same as No Action	Same as No Action
Storage of Water Quality Water	Only as exchange for Stampede Project Water	Same as No Action	Allows full implementation of Truckee River Water Quality Settlement Agreement (WQSA) - Water Quality Credit Water managed pursuant to WQSA
<b>vi. Martis Creek Reservoir</b>			
Use to temporarily store flood water	Yes	Same as No Action	Same as No Action
<b>vii. Lahontan Reservoir</b>			
Use to store water for Carson Division	Yes	Same as No Action	Same as No Action
<b>b. Recreation pools</b>			
Maintenance of recreation pools	None	Same as No Action	Not required, but Administrator would encourage scheduling of releases to meet recreation objectives in California Guidelines - U.S. would attempt to maintain 19,000 acre-feet in Prosser Creek Reservoir during summer

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
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Text sections	No Action	LWSA	TROA
<b>c. Minimum fish pools</b>			
Maintenance of pools	None	None	5,000 acre-feet in Prosser Creek Reservoir
<b>d. Minimum reservoir releases</b>			
Minimum releases	As shown in table 2.4, though all would not be mandatory	Same as No Action	All releases would be mandatory and a few could be greater than those in table 2.4
Use of Credit Water to enhance minimum releases	No	No	Enhanced minimum releases required to the extent Credit Water exchanged
<b>e. Flood control operations (reservoirs) and dam safety requirements</b>			
Operations during flood conditions	In accordance with U.S. Army Corps of Engineers (COE) requirements	Same as No Action	Same as No Action
<b>f. Spills, conveyance losses, and evaporation losses</b>			
Operations during spills and precautionary release	In accordance with COE and dam safety requirements	Same as No Action	In accordance with COE and dam safety requirements, generally Credit Waters would spill before Project Water
<b>g. Reservoir pumping</b>			
Lake Tahoe	Requires Federal court order, Secretary's approval for irrigation, approval of California and Nevada for M&I, and according to applicable laws	Same as No Action	Requires Federal court order, approval of California, Nevada, and Secretary only for M&I during extreme drought conditions and according to applicable laws
Independence Lake	Obtain necessary California permits and comply with Federal and State laws	Same as No Action	Same as No Action
<b>h. Emergencies</b>			
Emergency and maintenance operations	Reservoir operations would not interfere	Same as No Action	Same as No Action
<b>4. TMWA's hydroelectric diversion dams</b>			
TMWA hydroelectric diversions	Single purpose water right—requires maintenance of Floriston Rates	Same as No Action	TMWA would waive single purpose water right so Credit Water could be accumulated



**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
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Text sections	No Action	LWSA	TROA
Hydroelectric bypass flow	1. Farad - 150 cfs minimum	Same as No Action	All four facilities – 50 cfs minimum and up to 150 cfs of Fish Water could be bypassed to enhance stream flows
	2. Fleish, Verdi, and Washoe - 50 cfs minimum	Same as No Action	
Divert any water from river to remove ice from Highland Ditch during December – February	Yes	Same as No Action	TMWA could continue to divert water from the river, except for Fish Water and Fish Credit Water released to compensate for ditch diversion.
Accumulation of Credit Water adverse to TMWA's hydroelectric water rights under Claims Number 5 through 9.	No	No	TMWA would not object as long as compensated according to TROA provisions
<b>5. Water exportation from Little Truckee River to Sierra Valley</b>			
About 7,000 acre-feet of Little Truckee River water could be exported annually to Sierra Valley	Yes	Same as No Action	Yes, except water could be acquired and retained as Credit Water in the Truckee River basin.
<b>6. Municipal and industrial water resources</b>			
<b>a. TMWA—Actions to meet future M&amp;I demand of 119,000 acre-feet per year</b>			
Exercise of existing water rights	Continue to exercise rights to 40 cfs, Private Water, acquired irrigation water rights, and Interim Storage Agreement Water	Same as No Action	TMWA would continue to exercise existing water rights and Credit Water would replace Interim Storage Agreement Water
Transfer of irrigation water rights to M&I use	Developers would continue to be required to dedicate former irrigation water rights for new M&I service	Same as No Action	1. Developers would dedicate former irrigation water rights at a 1.11/1.00 ratio, the excess used to accumulate Credit Water. 2. U.S. would not object to TMWA acquiring TCID's half of Donner or seeking permission to pump 2,000 from Sparks Marina Lake
Pumping Truckee Meadows groundwater	1. Normal water years, 12,570 acre-feet	1. Normal water years, 12,570 acre-feet	1. Normal water years, 12,570 acre-feet
	2. Dry water years, up to 22,000 acre-feet	2. Dry water years, up to 26,500 acre-feet	2. Dry water years, 15,950 acre-feet

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
Sections II. No Action, III. LWSA, and IV. TROA in this chapter) – continued**

Text sections	No Action	LWSA	TROA
		3. Initiate a 1,000 acre-foot per year recharge program	
Water conservation	1. Water saved through meter retrofit would not be reserved for dry water years	1. Same as No Action	1. Water saved through meter retrofit would be reserved for dry water years as Credit Water.
	2. Anticipated water conservation: 10% normal water years 19% dry water years	2. Anticipated water conservation: 10% normal water years 14.7% dry water years	2. Anticipated water conservation: 10% normal water years 15% dry water years
<b>b. Fernley</b>			
Actions to meet future M&I demand	Use groundwater and surface irrigation rights from the Newlands Project	Same as No Action	In addition to using surface water and groundwater, excess surface water stored as Credit Water
<b>c. Lake Tahoe in Nevada</b>			
Actions to meet future M&I demand	Diverted from tributaries and pumping Lake Tahoe and groundwater	Same as No Action	Same as No Action
<b>d. Truckee River and Lake Tahoe basins in California</b>			
Actions to meet future M&I demand	1. Truckee River basin: Increase annual groundwater usage by 12,030 acre-feet	1. Truckee River basin: Increase annual groundwater usage by 10,830 acre-feet and increase annual surface water diversions by 1,200 acre-feet	Same as LWSA
	2. Lake Tahoe basin: Increase annual surface/groundwater usage by 4,300 acre-feet	2. Lake Tahoe basin: Increase annual combined surface water/groundwater usage by 4,300 acre-feet	
<b>7. Administration, accounting, and schedule</b>			
Administration of <i>Orr Ditch</i> decree	Federal Water Master	Same as No Action	Federal Water Master would still administer the decree, and the Administrator would carry out the terms of TROA
<b>8. Additional elements unique to TROA</b>			
California Guidelines for flows and storage	No incentive to follow guidelines	No incentive to follow guidelines	Administrator would encourage scheduling parties to follow
Habitat restoration fund	None	None	Parties to TROA would establish a 30-year fund for riverine habitat restoration

**Table 2.1—A comparison of water management provisions among the alternatives  
(Table entries correspond to sub-sections [numbers/letter and titles] under  
Sections II. No Action, III. LWSA, and IV. TROA in this chapter) – continued**

Text sections	No Action	LWSA	TROA
Storage contract and hydroelectric power compensation	None	None	Parties to TROA would have storage contract with Reclamation and TMWA would be compensated for the loss of certain hydroelectric power generation

The three alternatives also include projections by TMWA, Reno, Sparks, and Washoe County (March 12, 2003, letter<sup>3</sup> to the Bureau of Indian Affairs in attachment C) that different amounts of supplemental water<sup>4</sup> from water right acquisitions, groundwater pumping and injection wells, and water conservation practices would be secured under each alternative to meet future M&I demand in Truckee Meadows. Because TMWA is responsible for most of the Truckee Meadows water supply and has undertaken a resource planning process to evaluate all alternative water supplies (2005–2025 Water Resource Plan: Working Draft Volume 2, November 5, 2002; and the final version, 2005-2025 Water Resource Plan, March 2003), these projections were included in the alternatives. In addition, the alternatives include projections by California Department of Water Resources (CDWR) that different amounts of surface water and groundwater would be used in the Lake Tahoe and Truckee River basins in California under each alternative.<sup>5</sup> (See attachment D.)

## II. No Action

Evaluation of No Action is required by regulations implementing both NEPA (40 Code of Federal Regulations [CFR] 1502.14(d)) and CEQA (Title 14, California Code of Regulations [CCR] section 15126.6). No Action describes water management in the Truckee River basin if the proposed action or other action alternatives were not implemented. No Action may be thought of as a continuation of current operations and trends in the study area for the next 26 years (to 2033) when the annual demand for TMWA's M&I water in Truckee Meadows is projected to reach 119,000 acre-feet. No Action assumes that current surface water administrative policies would continue. Such policies include California's State Water Resources Control Board (SWRCB)

<sup>3</sup> Projections given in this letter were based on TMWA's 2005-2025 Water Resource Plan, March 2003. TMWA's board of directors accepts this water budget and water resource plan as fulfillment of its responsibility under the Joint Powers Authority agreed to by Washoe County, Reno, and Sparks on October 20, 2000.

<sup>4</sup> See the associated section C.6.a in each alternative for a description of supplemental water resources.

<sup>5</sup> See the associated section C.6.d and table 2.5 for a description of California water usage associated with each alternative.

moratorium or policy equivalent on processing pending water right applications that would exceed the interstate allocation as established in the draft Compact for the Lake Tahoe basin.

## **A. Overview**

Under No Action, Truckee River reservoir operations would remain unchanged from current operations (described in “Water Operations and Facilities”) and would be consistent with existing court decrees, agreements, and regulations described in chapter 1 that currently govern surface water management (i.e., operating reservoirs and maintaining streamflows) in the Lake Tahoe and Truckee River basins. TMWA’s existing programs for surface water rights acquisition and groundwater pumping for M&I use would continue. Groundwater pumping and water conservation in Truckee Meadows, however, would satisfy a greater proportion of projected future M&I demand than under current conditions. Groundwater pumping in California also would increase to satisfy a greater projected future M&I demand.

## **B. Interstate Allocation**

The apportionment of waters of Lake Tahoe and the Truckee River and Carson River basins conditionally approved by the Congress in section 204(b) and (c), respectively, of P.L. 101-618 would not become effective under No Action. Current surface water administrative policies would continue.

California and Nevada may continue to honor, as far as possible, the allocations in the draft Compact (though not ratified by the Congress), which are similar to the allocations in P.L. 101-618. It is assumed for purpose of the No Action analysis that current surface water administrative policies would continue, including SWRCB’s moratorium in effect since 1972, on acting on pending water right applications in the Lake Tahoe basin that would exceed the draft Compact’s allocation or subsequent policy equivalent.

It is also reasonable to assume that, because of projected community growth in the study area, some existing appropriative and riparian water rights not being fully used could be used more efficiently or that diversion amounts could be lawfully increased in the future. When asked to identify a specific quantity for input to the operations model, CDWR estimated that an additional 300 acre-feet per year could be made available in the Truckee River basin in California under existing appropriative and riparian water rights.<sup>6</sup> For example, subject to the requirements of existing law, a water right permittee may build up diversions and use over time to the full amount authorized in the permit. This type of action, together with other lawful adjustments to diversions, is assumed to increase water diversions by 300 acre-feet by 2033, without granting any new water rights permits.

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<sup>6</sup> The upper Truckee River basin is defined as the Truckee River basin in California.

## C. Water Operations<sup>7</sup> and Facilities

### 1. Water Categories

No Action assumes that water would continue to be stored and managed as water categories identified in table 2.2, as under current operations.

### 2. Floriston Rates

The *Truckee River General Electric* and *Orr Ditch* decrees would continue to be implemented as under current operations to maintain prescribed flows (known as Floriston Rates) in the Truckee River at the Farad gauge. Floriston Rates provide water to serve hydroelectric power generation, M&I, and agriculture water rights specified in the *Orr Ditch* decree. The decrees also establish criteria for storing Floriston Rate Water in Lake Tahoe and Boca Reservoir and for later release to maintain Floriston Rates. These rates of flow are determined by the water surface elevation of Lake Tahoe and month as shown in table 2.3. Sufficient Floriston Rate Water is released to achieve such rates when unregulated flow is otherwise insufficient.

Water would continue to be diverted from the Truckee River in accordance with the *Orr Ditch* decree. Floriston Rate Water and unregulated water in the river that are not required to satisfy the Pyramid Tribe's irrigation rights<sup>8</sup> or TMWA's right to continuously divert 40 cfs from the river, and not legally diverted by other senior water rights holders, could be diverted at Derby Diversion Dam for use on the Newlands Project, consistent with Operating Criteria and Procedures (OCAP). Remaining water in the Truckee River would flow to Pyramid Lake as Pyramid Tribe Appropriated Water. TMWA would continue to be allowed to divert any amount of water from the Truckee River during December, January, and February as needed to remove ice from the Highland Ditch (serves Chalk Bluff Water Treatment Facility in Reno).

If Floriston Rates could not be achieved for the entire April-September period, the Truckee River Basin Committee (signatories to the Truckee River Agreement [TRA]) could, by unanimous agreement, reduce Floriston Rates in order to extend the otherwise shortened water delivery season. Diversion of available water would be administered according to decreed priorities.

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<sup>7</sup> "Water operations" means the management of categories of water stored in a reservoir or flowing in a river to meet specific objectives (e.g., serve water rights, achieve streamflows). Operations include such techniques as accumulating water in storage, exchanging water categories, and releasing water from storage.

<sup>8</sup> Claim Nos. 1 and 2 of the *Orr Ditch* decree, which are the most senior rights on the river.

**Table 2.2—Water categories<sup>1</sup> and uses under No Action**

Project Water	Water stored in Lake Tahoe, Prosser Creek Reservoir, Stampede Reservoir, and Boca Reservoir pursuant to existing storage license with SWRCB
Floriston Rate Water	Project Water stored in Lake Tahoe and Boca Reservoir pursuant to the <i>Orr Ditch</i> decree, water exchanged under the Tahoe-Prosser Exchange Agreement (TPEA), and unregulated flow in the Truckee River are used to achieve Floriston Rates
Stampede Project Water	Project Water stored in Stampede Reservoir pursuant to the existing U.S. storage permit with SWRCB and released to benefit Pyramid Lake fishes <sup>2</sup> and to maintain minimum reservoir releases
Prosser Project Water	Project Water stored in Prosser Creek Reservoir pursuant to the existing U.S. storage license with SWRCB, exchanged under TPEA, released to benefit of Pyramid Lake fishes and to maintain minimum reservoir releases
Newlands Project Credit Storage	Water temporarily stored in Stampede Reservoir in accordance with the terms of Operating Criteria and Procedures (OCAP) for the Newlands Project (43 CFR 418.20)
TMWA Interim Storage	Private Water stored in Stampede and Boca Reservoirs in accordance with the Interim Storage Agreement <sup>3</sup>
Private Water	Water stored by TMWA in Independence Lake and Donner Lake, and by TCID in Donner Lake
TCID Private Water	Private Water stored pursuant to the water rights of TCID in Donner Lake for the benefit of TCID
TMWA Private Water	Private Water stored pursuant to the water rights of TMWA in Independence Lake and Donner Lake for M&I use in TMWA's service area (generally Truckee Meadows)
Tahoe-Prosser Exchange Water	Project Water stored in Prosser Creek Reservoir pursuant to the existing United States' storage license/permit with SWRCB and released pursuant to TPEA to make up for Floriston Rate Water previously released to maintain minimum releases from Lake Tahoe
Pyramid Tribe Appropriated Water	Water in the Truckee River not subject to vested and perfected rights as of 1984, that was appropriated by the Pyramid Tribe pursuant to Nevada State Engineer Ruling No. 4683 <sup>4</sup>
Water Quality Water	Water associated with water rights acquired under the Truckee River Water Quality Settlement Agreement

<sup>1</sup> To simplify the discussion, some water category names used here and some in table 2.7 were altered slightly from those used in the Negotiated Agreement (e.g., Private Water is referred to as Privately Owned Stored Water in the Negotiated Agreement), while others were altered to conform to names used in the Negotiated Agreement.

<sup>2</sup> Cui-ui and Lahontan cutthroat trout are collectively referred to as Pyramid Lake fishes.

<sup>3</sup> Absent TROA, the Interim Storage Agreement will terminate in 2018, but may be renewed at that time by the parties. Under TROA, the Interim Storage Agreement automatically terminates.

<sup>4</sup> The ruling is pending on appeal.

**Table 2.3—Floriston Rates (cfs) as a function of Lake Tahoe elevation and month**

Lake Tahoe elevation (Lake Tahoe datum <sup>1</sup> )	October	November-February	March	April-September
Below 6225.25	400	300	300	500
6225.25-6226.00	400	350	350	500
Above 6226.00	400	400	500	500

<sup>1</sup> Lake Tahoe datum is an elevation reference point at Lake Tahoe Dam for measuring the elevation of Lake Tahoe. The point is assumed to be at an elevation of 6230.0 feet.

### 3. Reservoir Operations

No Action assumes that all reservoirs would continue to accumulate<sup>9</sup> water designated for the storage categories identified in table 2.2.<sup>10</sup> The following priorities to accumulate water under No Action would be the same as under current operations. Except for the filling of Donner Lake (9,500 acre-feet) and the first 3,000 acre-feet of water accumulated in Independence Lake each year, all reservoirs in the Lake Tahoe and Truckee River basin accumulate water so as not to interfere with maintaining Floriston Rates and in accordance with priorities and other terms of their respective storage licenses. When Floriston Rates are being achieved or exceeded, Lake Tahoe and Boca Reservoir are the first in priority to accumulate Project Water (up to full reservoir and 25,000 acre-feet, respectively). When diversions at Derby Diversion Dam for the Newlands Project are not required to satisfy OCAP targets, Project Water can be accumulated in the remaining space of Boca Reservoir (15,850 acre-feet), followed by the remaining space of Independence Lake (14,500 acre-feet), then Stampede Reservoir (126,000 acre-feet) and finally Prosser Creek Reservoir (30,000 acre-feet).<sup>11</sup> Martis Creek Reservoir (20,400 acre-feet) only temporarily accumulates water according to U.S. Army Corp of Engineers (COE) flood control requirements.

#### a. Accumulation, Storage, and Release

##### (1) Lake Tahoe and Boca Reservoir

Lake Tahoe and Boca Reservoir operations would continue as under current operations to be coordinated to maintain Floriston Rates, in accordance with TRA. Therefore, the following operations would continue to be practiced. Floriston Rate Water would be released from these reservoirs as available when unregulated flow in the basin is insufficient to maintain Floriston Rates. Boca Reservoir would be the primary source of stored water for maintaining Floriston Rates when Lake Tahoe is above 6,225.5 feet from April through October, at which time releases from Lake Tahoe would be reduced to achieve only minimum streamflows to the extent Floriston Rate Water can be stored in Prosser Creek Reservoir. (See “Minimum Reservoir Releases.”) Lake Tahoe would be the primary source to support Floriston Rates from April through October when its elevation is equal to or below 6,225.5 feet. From November through March, Boca Reservoir would generally provide water for Floriston Rate Water, though Lake Tahoe is frequently a major contributor.

##### (2) Donner Lake

TMWA and TCID own the rights to 9,500 acre-feet storage space in Donner Lake as tenants in common. Under No Action, as under current operations, TMWA would

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<sup>9</sup> For this final EIS/EIR, the term “accumulate” means to create and increase storage of a water category in a reservoir. In the Negotiated Agreement, however, “accumulation,” “impoundment,” and “establishment” are defined terms that relate separately to different water categories and operations.

<sup>10</sup> This does not include Pyramid Tribe Appropriated Water and Water Quality Water, which may not be accumulated under No Action in Truckee River reservoirs.

<sup>11</sup> Prosser Creek Reservoir capacity is 29,800 acre-feet; SWRCB license is 30,000 acre-feet.

continue to manage its half (TMWA Private Water) for M&I use in Truckee Meadows and for power generation at TMWA's four hydroelectric powerplants along the Truckee River. TCID would continue to manage its half (TCID Private Water) to serve irrigation rights on the Newlands Project when OCAP would allow diversions from the Truckee River. Other than when required by its respective owners in the fall, stored water must be released for dam safety purposes. Water released for dam safety purposes may then be used to achieve Floriston Rates.

Donner Lake is currently, and would continue to be under No Action, operated according to the 1943 Donner Lake Indenture, which requires that the dam be operated to prevent the lake from exceeding elevation 5935.8 feet, and prohibits water from being released (other than minimum releases for streamflow purposes) during June, July, or August when lake elevation is less than 5932.0 feet. Water rights of the Donner Lake Water Company and its successors reserved by the 1943 Donner Lake Indenture are quantified and made applicable to specified lands in the Donner Lake basin by an agreement dated April 27, 1998, among Sierra Pacific, TCID, and the Donner Lake Water Company under which up to 990 acre-feet per year may be used for domestic and commercial uses on the specified lands. Dam safety requirements specify that the discharge gates of the dam be held open from November 15 through April 15 to prevent the water surface from exceeding elevation 5926.9 feet. During droughts, California may allow the gates to remain closed longer in the fall and to be closed earlier in the spring.<sup>12</sup>

### **(3) Prosser Creek Reservoir**

United States and the Pyramid Tribe would continue to manage Prosser Project Water as under current operations and the following operations would continue. Once Floriston Rates, OCAP diversion allowance, and storage targets for other reservoirs have been satisfied, the United States may accumulate up to 30,000 acre-feet in Prosser Creek Reservoir after April 10. Prosser Project Water is first used to satisfy provisions of TPEA. (See "Minimum Reservoir Releases.") Such Tahoe-Prosser Exchange Water may be carried over in storage from one year to the next (up to the winter maximum of 9,800 acre-feet), but usually is released during the year in which it was accumulated. The U.S. Fish and Wildlife Service (FWS) and the Pyramid Tribe would continue to jointly manage Prosser Project Water stored in excess of that needed for TPEA, in coordination with Stampede Project Water operations, for the benefit of Pyramid Lake fishes. For later exchanges under TPEA, however, Prosser Project Water is reserved to fill the 9,800 acre-feet of carryover space not occupied by Tahoe-Prosser Exchange Water; in essence, this creates a maximum annual release of about 20,000 acre-feet.

### **(4) Independence Lake**

TMWA, which owns rights to the reservoir portion of Independence Lake, would continue to accumulate and release TMWA Private Water for M&I use in Truckee Meadows.

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<sup>12</sup> Donner Lake operations are now the subject of a lawsuit between TCID and TMWA, and the assumed operations could change depending on the outcome of that suit.



The Interim Storage Agreement (chapter 1, “History of Reservoir and River Operations”) allows TMWA Private Water in Independence and Donner Lakes to be re-stored in Stampede and Boca Reservoirs as TMWA Interim Storage. Each year, any TMWA Interim Storage in excess of 5,000 acre-feet on September 1 is converted to Stampede Project Water. In addition, when storage in Independence Lake is forecast to be below 7,500 acre-feet during the summer, California may direct TMWA to provide and maintain a fish channel through the Independence Creek delta.

### **(5) Stampede Reservoir**

Once Floriston Rates, OCAP diversion allowance, and storage targets for all reservoirs, except Prosser Creek Reservoir, are met, the United States may accumulate up to 126,000 acre-feet in Stampede Reservoir annually. FWS and the Pyramid Tribe would continue to jointly manage Stampede Project Water consistent with the U.S. District Court’s opinion in *Carson-Truckee Water Conservancy District, et al. v. Watt*, 1982. As under current operations, if the runoff forecast indicates that unregulated flow in the lower Truckee River is not likely to be sufficient for the management objective for Pyramid Lake fishes, FWS and the Pyramid Tribe could release Stampede Project Water to supplement lower Truckee River flow. Therefore, once released, Stampede Project Water could not be diverted from the river, other than temporarily at TMWA’s hydroelectric diversion dams for generating electricity, and could not be used to achieve Floriston Rates. Management objectives vary from year to year depending on forecasted runoff, the amount of Stampede and Prosser Project Waters in storage, and the management objectives for Pyramid Lake fishes (chapter 3). These Project Waters may also be released to benefit riparian habitat along the lower Truckee River, which would indirectly benefit Pyramid Lake fishes.

In addition to TMWA Interim Storage, Water Quality Water (chapter 1, “History of Reservoir and River Operations”) could be stored in Stampede Reservoir, as under current operations and assuming compliance with SWRCB permits, licenses, and applicable California law. Such storage could be accomplished by exchanging Water Quality Water flowing in the lower Truckee River for an equal amount of Stampede Project Water or Prosser Project Water scheduled to be released. As with Project Waters, once Water Quality Water is released, it could not be diverted from the river, other than temporarily for generating electricity at TMWA’s Truckee River hydroelectric powerplants, and could not be used to achieve Floriston Rates.

In accordance with OCAP, Reclamation would continue under No Action to: (1) refine diversions of Truckee River water to Lahontan Reservoir at Derby Diversion Dam, (2) maximize the use of Carson River water for the Newlands Project, and (3) minimize diversions of Truckee River water to Lahontan Reservoir in order to maintain as much water in the lower Truckee River as possible. Management of Newlands Project Credit Storage in Stampede Reservoir, along with other mechanisms in OCAP, would be used to accomplish these objectives.

Newlands Project Credit Storage could be accumulated each year from the end of the previous irrigation season (usually mid-November) through June in either of two ways: (1) allowing Truckee River water that otherwise would have been diverted at Derby Diversion Dam to flow to Pyramid Lake in exchange for an equal amount of Stampede Project Water, or (2) capturing in Stampede Reservoir water in excess of Floriston Rates or Reduced Floriston Rates that would otherwise have been passed through and diverted to Lahontan Reservoir. Consistent with OCAP, the storage would be released by the end of the irrigation season as needed to achieve Lahontan Reservoir storage targets. Such water would not be diminished by evaporation or seepage while in storage, nor conveyance loss during delivery. Any Newlands Project Credit Storage remaining in Stampede Reservoir at the end of the irrigation season would convert to water dedicated to the conservation of Pyramid Lake fishes.

**(6) Martis Creek Reservoir**

COE would continue to use the 20,400-acre-foot capacity of the reservoir for temporary flood control. Because no long-term storage is permitted, no minimum release is required to maintain streamflow.

**(7) Lahontan Reservoir**

TCID would continue to operate Lahontan Reservoir for Newlands Project purposes in accordance with OCAP. Lahontan Reservoir receives inflow primarily from the Carson River, supplemented by the Truckee River via the Truckee Canal, when Lahontan Reservoir storage is forecast to be below the monthly target set by OCAP.

**b. Recreational Pools**

As under current operations, no recreational pools would be maintained in the Federal reservoirs or Independence Lake under No Action. The 1943 Donner Lake Indenture would continue to require a recreational pool for Donner Lake.

**c. Minimum Fish Pools**

As under current operations, no minimum reservoir pools to protect fish populations would be required under No Action.

**d. Minimum Reservoir Releases**

Minimum releases from all reservoirs would be the same under No Action as under current operations (table 2.4) and would be maintained (to the extent water is available, except for Lake Tahoe) even if the water could not be re-stored or used for its intended purpose.

**(1) Lake Tahoe**

As under current conditions, TPEA (chapter 1, “History of Reservoir and River Operations”) would be applicable under No Action for maintaining minimum releases from Lake Tahoe when no releases would otherwise have been made. TPEA allows water to be released from Lake Tahoe for the benefit of fish resources immediately downstream in exchange for an equivalent amount of water in Prosser Creek Reservoir

**Table 2.4—Minimum reservoir releases (cfs)**

Lake Tahoe	
– October through March	50
– April through September	70
Donner Lake	2-3
Prosser Creek Reservoir	0-5
Independence Lake	2
Stampede Reservoir	30
Boca Reservoir	None

that is reserved to maintain Floriston Rates. From April 1 through September 30, the minimum release from Lake Tahoe is 70 cfs; otherwise, it is 50 cfs. These releases are made only if there is sufficient water accumulated in Prosser Creek Reservoir for the exchange (or if Prosser Creek inflow is simultaneously converted or stored as the exchange occurs). Tahoe-Prosser Exchange Water is released later in lieu of releases from Lake Tahoe or Boca Reservoir to maintain Floriston Rates. Because storage of exchange water may not interfere with COE flood storage space requirement for Prosser Creek Reservoir, the Federal Water Master strives to release all exchange water before November 1. As under current operations, the Federal Water Master may vary the release of Floriston Rate Water from Lake Tahoe and Boca Reservoir in order to avoid a TPEA exchange.

**(2) Donner Lake**

As under current operations, the minimum release from Donner Lake for the benefit of fish resources would be 2 cfs when the flow immediately downstream from the confluence with Cold Creek is 5 cfs or more; otherwise, the minimum release would be 3 cfs. Because the gates of the dam must be held open from November 15 through April 15, lake level determines the outflow for that period; thus, flow could be less than the 2 or 3 cfs otherwise required.

**(3) Prosser Creek Reservoir**

A minimum release of 5 cfs, or inflow to the reservoir, whichever is less, would be required, as under current operations. If pass-through water or release of exchange water were not sufficient, then Prosser Project Water would be released to Pyramid Lake.

**(4) Independence Lake**

A minimum release of 2 cfs would be maintained, as under current operations.

**(5) Sierra Valley Diversion Structure**

The minimum bypass flow<sup>13</sup> at the Sierra Valley diversion structure on the Little Truckee River is 5 cfs from March 15 through June 15, and 3 cfs from June 16 through September 30. No diversions are made from October 1 through March 14.

**(6) Stampede Reservoir**

United States, through an informal agreement with CDFG, would maintain a minimum release of 30 cfs from Stampede Reservoir for the benefit of fish and wildlife in the Little Truckee River.<sup>14</sup> Any Stampede Project Water released for minimum flow and not required in the lower Truckee River would be re-stored in Boca Reservoir for later release or exchanged back to Stampede Reservoir by capturing in Stampede Reservoir an equivalent amount of water which could otherwise be accumulated in Boca Reservoir.

**(7) Boca Reservoir**

No minimum release would be required from Boca Reservoir.

**(8) Martis Creek Reservoir**

No minimum release would be required from Martis Creek Reservoir.

**e. Flood Control Operations and Dam Safety Requirements**

As under current operations, Prosser Creek, Stampede, Boca, and Martis Creek Reservoirs would be operated in accordance with existing COE flood control regulations, which attempt to limit Truckee River flow to a maximum of 6,000 cfs through Reno. While not part of the COE flood control plan, under No Action, Lake Tahoe would continue to be operated to conform to this restriction as long as such operation did not cause the lake elevation to exceed 6229.1 feet. Donner Lake and Independence Lake would continue to be operated in accordance with dam safety requirements.

As under current operations, Prosser Creek Reservoir would be managed to provide 20,000 acre-feet of flood space from November 1 to at least April 10 of the following year. If the forecasted runoff is greater than that prescribed in the Flood Control Manual for the Truckee River (COE, 1985), then flood space must be held vacant for a longer period. Stampede and Boca Reservoirs would continue to provide a combined 30,000 acre-feet of flood space with similar restrictions as described for Prosser Creek Reservoir. Martis Creek Reservoir would continue to provide 20,000 acre-feet of flood space.

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<sup>13</sup> "Bypass flow" is water that is not diverted at a structure but is allowed to flow downstream.

<sup>14</sup> This 30 cfs minimum release, while being honored under current operations, is more than twice the minimum required by the SWRCB Stampede Reservoir permit.

**f. *Spills, Conveyance Losses, and Evaporation Losses***

As under current operations, water could be released to prevent or reduce the magnitude of a spill (called a precautionary release). Project Water would be the last category of stored water to spill or be released for precautionary purposes. Project Water in Lake Tahoe and Prosser Creek Reservoir, and Private Water in Donner and Independence Lakes would be charged evaporation losses when inflow is insufficient to compensate for the loss. Conversely, Project Water stored in Boca and Stampede Reservoirs would be charged the loss regardless of inflow. Project Waters released to the river would share conveyance losses proportionately to other water in the river, while Private Water would not be charged a share of the loss until it is the only water in the river.

**g. *Reservoir Pumping***

As under current operations, water could be pumped (or siphoned) from Lake Tahoe and Independence Lake under certain conditions. According to TRA, Lake Tahoe could only be pumped or siphoned for hydroelectric power generation or irrigation if agreed to by the Secretary, and for “sanitary or domestic uses” if agreed to by California and Nevada.

TMWA could only pump water from Independence Lake after obtaining the necessary permits from California. These actions would be required to comply with applicable Federal and California laws (e.g., NEPA and CEQA).

**h. *Emergencies***

As under current operations, Federal, State, or local governmental agencies would respond to emergencies involving their water management facilities or water resources. Also, the Federal Water Master would continue to be authorized to take actions necessary to respond to an emergency.

**4. *TMWA’s Hydroelectric Diversion Dams***

TMWA’s hydroelectric diversion dams (Farad, Fleish, Verdi, and Washoe) located on the Truckee River between the confluence of the Little Truckee River and Reno<sup>15</sup> would continue to be used to divert water into flumes for conveyance to hydroelectric powerplants, where the water would be either passed through turbines or overflow into spillways before returning to the river. TMWA has *Orr Ditch* decree rights to divert sufficient water from the Truckee River to provide from 327 cfs to 400 cfs at these plants<sup>16</sup> to generate hydroelectric power.

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<sup>15</sup> Though transfer of the Farad facilities from Sierra Pacific to TMWA has been delayed by the process to rebuild Farad Diversion Dam, TMWA is assumed for this final EIS/EIR to be the owner. (See chapter 1 for details.)

<sup>16</sup> TMWA advises that it must divert 425 to 450 cfs to meet decreed flows at the individual plants.

The minimum bypass flow for the Farad Diversion Dam would continue to be 150 cfs or the flow of the Truckee River immediately upstream of the diversion, whichever is less.<sup>17</sup> While there would continue to be no mandatory minimum bypass flow at the diversion dams for Fleish, Verdi, and Washoe hydroelectric powerplants, an informal agreement between TMWA and FWS would continue to maintain a minimum flow of 50 cfs over each dam.

## **5. Water Exportation from Little Truckee River to Sierra Valley**

Under No Action, about 7,000 acre-feet would continue to be exported annually from the Little Truckee River for irrigation in Sierra Valley (Feather River basin) under the *Sierra Valley* decree.

## **6. Municipal and Industrial Water Resources<sup>18</sup>**

### **a. TMWA**

To meet the 2033 projected annual M&I demand of 119,000 acre-feet in TMWA's service area under No Action, TMWA plans to continue to exercise its existing water rights and expand its present conservation and acquisition programs.

#### **(1) Exercise of Existing Water Rights**

TMWA plans to continue to exercise its rights (1) under TRA to divert up to 40 cfs from the Truckee River, (2) to the surface flows of Hunter Creek, (3) to existing irrigation water that has been converted to M&I use, and (4) to private storage in Independence Lake and Donner Lake, including TMWA Interim Storage in Stampede and Boca Reservoirs.

#### **(2) Transfer of Irrigation Water Rights to Municipal and Industrial Use**

TMWA anticipates that, under No Action, developers in Truckee Meadows would continue the current practice of dedicating water rights for new service commitments. As is the current practice, dedicated water rights would be obtained from existing *Orr Ditch* decree irrigation water rights in the Truckee Meadows, Verdi, Spanish Springs, and Tracy areas. In the past as a drought protection measure, TMWA required developers to dedicate more water rights than necessary to serve new commitments during normal water years.<sup>19</sup> TMWA, however, anticipates that, under No Action, developers would not

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<sup>17</sup> Required by term and condition No. 12 of SWRCB's 401 Certification for the Farad Diversion Dam Replacement Project Proposed by Sierra Pacific (2003). It is assumed for this final EIS/EIR that the Farad Diversion Dam has been rebuilt.

<sup>18</sup> Usage assumptions and water resources, in addition to those given in this section, are described in chapter 3, "General Methods and Assumptions" and "Surface Water."

<sup>19</sup> A normal water year would exist when the April 15 forecast for the Truckee River indicates there would be sufficient unregulated flow and Floriston Rate Water storage to maintain Floriston Rates through the water year (October through September).

be required to dedicate additional water rights. Currently, TMWA has accumulated 57,170 acre-feet of former irrigation water rights. Under No Action, TMWA anticipates that developers would provide an additional 25,860 acre-feet by 2033.

### **(3) Pumping Truckee Meadows Groundwater**

Under No Action, TMWA is expected to use the Nevada State Engineer's Groundwater Management Order 1161, dated May 16, 2000, (attachment E) to increase its pumping of groundwater from Truckee Meadows during dry water years<sup>20</sup> in exchange for reduced pumping during normal water years. As a consequence, TMWA would pump less than its entitlement during normal water years in order to be allowed to pump more during dry water years. Therefore, TMWA would pump about 12,570 acre-feet during normal water years, though entitled to pump 15,950 acre-feet, and up to 22,000 acre-feet during dry water years. It is assumed that any new production wells would be drilled in the aquifer addressed in Groundwater Management Order 1161.

### **(4) Water Conservation**

TMWA plans to use water saved through the residential water meter retrofit program and M&I conservation practices to serve existing and new water customers. TMWA contends that chapter 617 of the 1989 Statutes of Nevada, which prohibits water conserved by retrofitting residences with water meters from being served to water customers during normal water years, does not apply to it.

In addition to the current conservation program (with the objective to reduce annual demand by 10 percent), TMWA anticipates that more conservation measures would be implemented during dry water years under No Action so as to reduce annual demand by an additional 9 percent.

#### **b. Fernley**

To meet its M&I demand under No Action, Fernley plans to continue to exercise existing surface water rights (about 4,000 acre-feet) and to pump groundwater from the local aquifer, along with an additional 10,000 acre-feet of surface water rights acquired through its existing acquisition program. Because of competition between the Truckee River Water Quality Settlement Agreement (WQSA) and Fernley's M&I acquisition program, the No Action analysis for this study estimated that Fernley would acquire only an additional 6,800 acre-feet and the WQSA would acquire the remaining 10,300 acre-feet of surface water rights in the Truckee Division of the Newlands Project. (See chapter 3, "Surface Water," for more details.)

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<sup>20</sup> A dry water year would exist when the April 15 forecast for the Truckee River indicates there would not be sufficient unregulated flow and Floriston Rate Water storage to maintain Floriston Rates through the water year (October through September).

**c. Lake Tahoe Basin in Nevada**

Under No Action, surface water would continue to be diverted from tributaries entering Lake Tahoe and pumped from Lake Tahoe and local aquifers to provide a combined annual supply of up to 11,000 acre-feet of water for M&I demand in the Lake Tahoe basin in Nevada.

**d. Truckee River and Lake Tahoe Basins in California**

California anticipates that the annual demand for water (both surface and ground) in the Truckee River and Lake Tahoe basins in California by 2033 under No Action would be 22,700 acre-feet and 23,000 acre-feet, respectively (table 2.5). The State also estimates that surface water usage in California's Truckee River basin likely would increase by 300 acre-feet (for recreational or other purposes), while annual groundwater pumping in the basin likely would increase from the current 7,570 acre-feet up to 19,600 acre-feet to serve all other uses. In addition, annual water usage in the Lake Tahoe basin likely would increase from the current annual usage of 18,700 acre-feet to 23,000 acre-feet.

**Table 2.5—Water usage (acre-feet per year)  
Truckee River and Lake Tahoe basins in California**

	No Action	LWSA	TROA
<b>Truckee River basin</b>	22,700	22,700	22,700
Surface water	3,100	4,300	4,300
Groundwater	19,600	18,400	18,400
<b>Lake Tahoe basin</b>	23,000	23,000	23,000

**7. Administration, Accounting, and Scheduling**

The Federal Water Master appointed by the *Orr Ditch* court would continue to oversee and coordinate reservoir operations and the delivery of water to serve *Orr Ditch* decree water rights, maintain a water accounting system, and issue periodic reports of hydrologic data measurements.

**III. LWSA**

LWSA is an action alternative similar to No Action but with water supply options that may be authorized by State and local government agencies. LWSA describes a probable water management approach in the Truckee River basin if TROA were not implemented. It may be thought of as a continuation of current trends in the study area for the next 26 years (to 2033), when the annual demand for TMWA's M&I water in Truckee Meadows is projected to reach 119,000 acre-feet. It assumes that surface water management operations and storage facilities would be the same as described under No Action, but that groundwater pumping and M&I water conservation in Truckee Meadows and the Truckee River basin in California would differ. It also assumes that



local water authorities would obtain the necessary authorizations to implement various strategies and actions to meet projected demands if TROA were not implemented.

For California, LWSA assumes action by SWRCB to approve some pending applications to appropriate surface water, allowing, by 2033, an estimated 1,200 acre-feet per year of surface water to be used in lieu of groundwater otherwise used in the Truckee River basin in California. Total annual water usage, however, is anticipated to be the same as under No Action.

## **A. Overview**

The following would be the same under LWSA as under No Action:

- All elements of Truckee River reservoir operations
- River flow management
- Truckee River hydroelectric powerplant operations
- Minimum reservoir releases
- Reservoir spill and precautionary release criteria
- Water exportation from the Lake Tahoe and upper Truckee River basins

The principal differences between No Action and LWSA would be the source of water used for M&I purposes, extent of water conservation, implementation of an injection well recharge program in Truckee Meadows, and assumptions regarding governmental approval of new water supply proposals.

## **B. Interstate Allocation**

As under No Action, the apportionment of the waters of Lake Tahoe, the Truckee River basin, and the Carson River basin agreed upon by California and Nevada, and conditionally approved by Congress in section 204 of P.L. 101-618, would not become effective. According to CDWR (attachment D), it is assumed for purposes of LWSA that SWRCB would lift its moratorium and begin processing and approving some pending applications to appropriate surface water. LWSA assumes that, by 2033, this process would allow an estimated 1,200 acre-feet per year of surface water to replace groundwater otherwise used in the Truckee River basin in California. Total water use, however, is anticipated to remain the same as under No Action.

## **C. Water Operations and Facilities**

### **1. Water Categories**

Storage and management of water categories would be the same under LWSA as under No Action.

## **2. Floriston Rates**

Floriston Rate operations would be the same under LWSA as under No Action.

## **3. Reservoir Operations**

Reservoir operations would be the same under LWSA as under No Action.

## **4. TMWA's Hydroelectric Diversion Dams**

TMWA would operate its four hydroelectric diversion dams on the Truckee River the same as under No Action.

## **5. Water Exportation from Little Truckee River to Sierra Valley**

Water exportations from the Little Truckee River to Sierra Valley would be the same as under No Action.

## **6. Municipal and Industrial Water Resources**

### **a. TMWA**

To meet a projected annual M&I demand of 119,000 acre-feet in Truckee Meadows by 2033 under LWSA, TMWA would continue to exercise its existing water rights and expand its conservation and acquisition programs.

#### **(1) Exercise of Existing Water Rights**

Existing water rights would be exercised as they are under No Action.

#### **(2) Transfer of Irrigation Water Rights to Municipal and Irrigation Use**

Irrigation water rights would continue to be transferred to TMWA for new M&I water service as under No Action. TMWA anticipates that, through the dedication program, developers would provide an additional 25,860 acre-feet by 2033.

#### **(3) Pumping Truckee Meadows Groundwater**

Under LWSA, TMWA expects to pump about 4,500 acre-feet more groundwater during dry water years than under No Action. This additional withdrawal would be possible because TMWA would use injection wells to recharge the Truckee Meadows aquifer during normal water years with about 1,000 acre-feet of water from the Truckee River. It is assumed that new production and injection wells would be drilled in the aquifer as addressed by Groundwater Management Order 1161.

#### **(4) Water Conservation**

As under No Action, TMWA plans to use water saved by the residential water meter retrofit program and M&I conservation practices to serve existing and new water customers during normal and dry water years. The Truckee Meadows M&I conservation program would continue under LWSA and is anticipated to reduce annual M&I use by

about 10 percent. In addition to this savings, TMWA anticipates that an additional usage reduction of 4.7 percent would be required during dry water years. Less M&I conservation would be needed during dry water years under LWSA than under No Action because of the groundwater recharge program described under “Pumping Truckee Meadows Groundwater.”

**b. *Fernley***

The same amount of surface water and groundwater would be used to serve M&I demand in the vicinity of Fernley under LWSA as under No Action.

**c. *Lake Tahoe Basin in Nevada***

As under No Action, surface water would continue to be diverted from tributaries entering Lake Tahoe and pumped from Lake Tahoe and local aquifers to serve M&I demand in the Lake Tahoe basin in Nevada.

**d. *Truckee River and Lake Tahoe Basins in California***

California anticipates that the annual demand for water (both surface and ground) in the Lake Tahoe and Truckee River basins in California by 2033 under LWSA would be the same as under No Action, except that the water sources in the Truckee River basin in California (table 2.5) would differ from those under No Action. Annual usage of upper Truckee River basin surface water rights likely would increase from the current usage of 2,800 acre-feet to 4,300 acre-feet, while annual groundwater pumping in the basin likely would increase from the current 7,570 acre-feet to 18,400 acre-feet (1,200 acre-feet less than under No Action). As under No Action, annual water usage in the Lake Tahoe basin in California likely would increase from the current usage of 18,700 acre-feet to 23,000 acre-feet.

**7. *Administration, Accounting, and Scheduling***

Administration, accounting, and scheduling would be the same as under No Action.

## **IV. TROA**

TROA describes operation of all reservoirs and associated water management if the Negotiated Agreement were implemented. This section includes the following:

- Overview of TROA
- Description of the interstate allocation
- Description of water and facility operations under TROA
- Description of change petitions and water rights applications requiring SWRCB approval

The complete text of the Negotiated Agreement is included as an appendix.

## **A. Overview**

Implementation of TROA would modify operations of Federal and non-Federal reservoirs to enhance coordination and flexibility while ensuring that existing water rights are served and flood control and dam safety requirements are met. TROA would incorporate, modify, or replace certain provisions of TRA and TPEA. TROA would supersede all requirements of any agreements concerning the operation of Truckee River reservoirs, including those of TRA and TPEA, and would become the sole operating agreement for these reservoirs. Exhibits B and C in the attachment to chapter 2 describe how TRA and TPEA provisions, respectively, are addressed in the Negotiated Agreement. Table 2.6 lists the principal elements of TROA that differ from No Action and LWSA.

All reservoirs would generally continue to be operated under TROA for the same purposes as under current operations (table 2.2) and with most of the same Project Water storage priorities as under No Action and LWSA. TROA is required to ensure that water is stored in and released from Truckee River reservoirs to satisfy the exercise of *Orr Ditch* decree water rights. These elements in table 2.6 are intended to: (1) enhance water management flexibility, water quality, conditions for Pyramid Lake fishes, reservoir recreational opportunities, and reservoir efficiency; (2) increase M&I drought supply, minimum reservoir releases, and the capacity for carryover storage; (3) provide procedures to implement the allocation of Truckee River water between California and Nevada; and (4) decrease water use conflicts as compared to No Action and LWSA.

The primary difference between TROA and the other alternatives is that TROA would create opportunities for storing and managing categories of Credit Water. (See Section C, “Water Operations and Facilities,” table 2.7.) Signatories to the Negotiated Agreement generally would be allowed to accumulate Credit Water in reservoir storage by retaining or capturing water that otherwise would have been released from storage or passed through the reservoir to serve a downstream water right (e.g., reduction in the release of water necessary to achieve Floriston Rates). Such storage could only take place after a transfer in accordance with State water law. Once accumulated, Credit Water would be classified by category with a record kept of its storage, exchange, and release. Credit Water would be retained in storage or exchanged among the reservoirs until needed to satisfy its beneficial use. The Interim Storage Agreement would be superseded by a new storage agreement between Reclamation and TMWA.

TROA would provide procedures for facilitating and encouraging coordination of scheduled water releases and exchanges among the reservoirs. A scheduled release from one reservoir could be substituted for a release from another reservoir, and the respective water accounts in each reservoir would be credited and debited as appropriate. In these ways, existing water rights and storage rights would be served while streamflows and recreational pools could be enhanced, the potential for spills or need for precautionary releases could be reduced, and reservoir storage space would be used more effectively.

**Table 2.6—Principal elements of TROA that differ from No Action and LWSA  
(\* indicates items that do not appear in TROA, but are elements of PL 101-618  
that would become effective upon implementation of TROA  
or must be satisfied before TROA becomes effective)**

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- Incorporates, modifies, or replaces certain provisions of TRA and TPEA
  - Allows TROA signatories to accumulate water individually in all reservoirs (as Credit Water) by retaining water that would have otherwise been released from or passed through a reservoir to serve their individual downstream water right
  - Allows TROA signatories to exchange Credit Waters and Project Water among all reservoirs
  - Establishes rules and priorities for storing, managing, and spilling all categories of water
  - Requires coordinated scheduling of all reservoir operations under TROA
  - Provides for the implementation of the interstate allocation (section 204 of P.L. 101-618) between California and Nevada\*
  - Establishes criteria for acquiring water rights to meet a demand up to and exceeding 119,000 acre-feet within TMWA's service area
  - Establishes criteria for new wells in the Truckee River basin in California to minimize short-term reduction of streamflow
  - Increases minimum reservoir releases
  - Provides for Prosser Project Water and Stampede Project Water to be used for Pyramid Lake fishes even after the fishes are no longer listed under ESA
  - Expands procedures for accumulating Newlands Project Credit Water
  - Allows full benefits of WQSA to be realized by allowing water acquired pursuant to WQSA to be stored in Truckee River reservoirs\*
  - Supports an application to SWRCB to increase Stampede Reservoir's California Water Right so that the full capacity of the reservoir (226,500 acre-feet) could be used in the event that such quantity of water is available from Nevada rights
  - Supports an application to SWRCB to eliminate the 20,126 acre-feet per year limit on releases from Prosser Creek Reservoir
  - Establishes more strict conditions and approval requirements for pumping or siphoning water from Lake Tahoe
  - Provides for the settlement of litigation\*
  - Establishes the Habitat Restoration Fund for the Truckee River
  - Provides for the termination of the Interim Storage Agreement
  - Encourages water managers to accommodate California Guidelines for streamflow and recreational pool targets
  - Creates the positions of Administrator (to oversee implementation of TROA) and Truckee River Special Hearing Officer (to resolve disputes over administration of TROA)
  - Identifies cost sharing among parties (for administering TROA)
-

TROA would also contain provisions (Article Six of the Negotiated Agreement) to implement various portions of the interstate allocation of Lake Tahoe and Truckee River waters between Nevada and California (section 204 of P.L. 101-618). In addition, signatories would support the Nevada State Engineer's ruling on Permit Nos. 48061 and 48494 that allocate the remaining waters of the Nevada portion of the Truckee River to the Pyramid Tribe, and recognition by the *Orr Ditch* court that the Nevada portion of the Truckee River and its tributaries would be fully appropriated.

The position of Administrator would be created to oversee implementation of the Agreement. The Federal Water Master would continue to have the authority to enforce *Orr Ditch* decree water rights. Although the Agreement is written to protect the exercise of vested or perfected water rights, if operations inadvertently reduced the delivery amount of the water a person was legally entitled to receive, the Administrator would be empowered to take any actions necessary to avoid or replace the reduction of water.

The Negotiated Agreement also contains provisions to resolve any disputes which may arise among the parties over the administration of TROA. It would provide for the Truckee River Special Hearing Officer to decide such disputes. Decisions of the hearing officer could be reviewed by petition to the *Orr Ditch* court, the U.S. District Court in Reno with continuing jurisdiction over the *Orr Ditch* decree. Disputes arising under the *Orr Ditch* decree would continue to be subject to the jurisdiction of the *Orr Ditch* court.

United States, as plaintiff in the original *Orr Ditch* case, and the Pyramid Tribe, because of its intervention in that case for all purposes, are subject to the jurisdiction of the *Orr Ditch* court. Nevada, because of its intervention in the *Orr Ditch* case for all purposes, is subject to the court's jurisdiction. California has agreed in the Negotiated Agreement to be subject to the jurisdiction of the *Orr Ditch* court for certain limited purposes relating to TROA.

Nothing in the Negotiated Agreement is intended to alter other applicable Federal or State laws, including laws or procedures applicable to the water conditionally allocated to the States by P.L. 101-618, and dam safety or flood control. It is not intended to abrogate or expand the jurisdiction of SWRCB or the Nevada State Engineer. In addition, it would not affect the operation of the Carson River or the power of the U.S. District Court for the District of Nevada (or its Federal Water Master) under the *Alpine* decree.

## **B. Interstate Allocation**

TROA differs from No Action and LWSA in that certain Congressional actions would go into effect when TROA becomes effective: (1) allocations of Lake Tahoe and Truckee River waters between Nevada and California and (2) the confirmation of the *Alpine* decree as part of the interstate allocation for the Carson River basin as conditionally approved by the Congress in section 204 of P.L. 101-618. TROA would not allocate these waters between the States, but would provide an operational basis for serving Truckee River water rights consistent with such allocation. This surface water allocation

would be in addition to water currently exported from Lake Tahoe and Truckee River basins (in California), including that decreed to Sierra Valley Water Company. Surface water available for diversion in California but remaining in the river would be available for diversion in Nevada.

According to CDWR (attachment D), it is assumed for purposes of this analysis, as with LWSA, that SWRCB would lift its moratorium and begin processing pending water rights applications and approving some applications to appropriate surface water, allowing, by 2033, an estimated 1,200 acre-feet per year of surface water to replace groundwater otherwise used in the Truckee River basin in California. However, total water use is anticipated to remain the same as under No Action.

## **1. Lake Tahoe Basin**

### **a. Diversions and Reuse**

Under TROA, Nevada and California could annually divert up to 11,000 acre-feet and 23,000 acre-feet, respectively, from combined surface water and groundwater sources in the Lake Tahoe basin for use in the basin. The interstate allocation would allow depletion (i.e., complete consumption with no return flow) of water within the Lake Tahoe basin without additional charge to either allocation, subject to existing law that currently requires export of all treated effluent from the Lake Tahoe basin.

### **b. Snowmaking**

After 350 and 600 acre-feet of water have been used for snowmaking each year in the Lake Tahoe basin in Nevada and California, respectively, 16 percent of the additional water diverted and used in each State for snowmaking would be charged as a diversion against each State's allocation.

## **2. Truckee River Basin in California**

Consistent with section 204 of P.L. 101-618, TROA would provide that California could divert no more than 32,000 acre-feet per year from the upper Truckee River basin, with a maximum of 10,000 acre-feet per year coming from surface water.<sup>21</sup> The State, however, could deplete no more than 17,600 acre-feet per year. Any new appropriations of surface water allocation in the Truckee River basin in California would be served according to the following priority:

- (1) Pyramid Tribe's Claim Nos. 1 and 2 of the *Orr Ditch* decree
- (2) All California beneficial uses initiated before November 16, 1990
- (3) TMWA's 40 cfs right

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<sup>21</sup> Surface water diversions to Sierra Valley from the Little Truckee River would not be included in the 10,000 acre-foot limit.

- (4) All California beneficial uses, except commercial irrigated agricultural, initiated on or after November 16, 1990
- (5) All Nevada beneficial uses, including streamflow for fish and inflow to Pyramid Lake
- (6) Commercial, irrigated agriculture in California initiated on or after November 16, 1990

Surface water allocated to California from the upper Truckee River basin to generate hydroelectric power could only be used incidental to other releases.

**a. *Snowmaking***

After 225 acre-feet of water have been used for snowmaking each year in the Truckee River basin, 16 percent of the additional water diverted and used for snowmaking would be charged as a diversion against California's allocation.

**b. *Diversion to Use***

California could divert unregulated flow for beneficial use so long as its surface water allocation is not exceeded. For M&I purposes, California could also divert releases of some Credit Water categories and Project Water, as long as it compensates for such diversion by releasing a similar amount of California M&I Credit Water. Diversions using California water rights issued after May 1, 1996, could be no greater than 25 percent of the right within a month. Within the Donner Lake basin, in addition to the 990 acre-feet per year recognized in the April 29, 1998, agreement among TMWA, TCID, and Donner Lake Water Company, TROA would allow up to 40 acre-feet per year for small domestic registrations under California law. In the Independence Creek basin, TROA would allow up to 50 acre-feet of water per year for small domestic registrations that could be exercised adverse to TMWA's rights to Private Water under conditions specified in TROA.

**c. *Surface Storage***

California could accumulate California M&I Credit Water in reservoirs for later use in the Truckee River basin, so long as such accumulation, together with its diversions to use, would not exceed its surface water allocation. Accumulation of California M&I Credit Water with California water rights issued after May 1, 1996, could be no greater than 25 percent of the annual entitlement within a month and could not take place if Floriston Rate water is insufficient to maintain Floriston Rates. The unused portion of California's surface water allocation could be used to accumulate Credit Water to serve environmental needs. (See "California Environmental Credit Water and Additional California Environmental Credit Water.")

California would retain the right to build or authorize construction of facilities in the upper Truckee River basin to store its surface water allocation. Accumulation in those



facilities could not interfere with maintaining Floriston Rates or minimum reservoir releases. Using water rights issued after May 1, 1996, the total amount of water in new facilities at any one time could not exceed 10,500 acre-feet and such water could only be stored for M&I use or for the benefit of fish and wildlife. For new storage capacity in excess of 2,500 acre-feet, California's allowable storage of California M&I Credit Water and California Environmental Credit Water in all reservoirs would be reduced by an equal amount. These storage and usage limitations do not apply to the storage of the consumptive use portion of water rights issued in California on or before May 1, 1996, or to any *Sierra Valley* decree water rights transferred to the Truckee River basin in California.

**d. Underground Storage**

Each year, California could authorize diversion of a portion of its surface water allocation to underground storage.

**e. Well Criteria**

The interstate allocation provisions of P.L. 101-618 provide that all new wells drilled in the Truckee River basin in California after November 16, 1990, be designed to minimize short-term reductions of surface streamflows to the maximum extent feasible (in accordance with section 204(c)(1)(B) of P.L. 101-618). TROA would include specific approval criteria for wells drilled after May 1, 1996. These criteria provide incentives to locate wells away from surface water sources. TROA would preclude any signatory party from challenging the construction of any water supply well under section 204(c)(1)(B) if the well: (1) was constructed prior to May 1, 1996; (2) served a single-family dwelling irrigating less than 1 acre of land; or (3) was in a special zone and met specific criteria for that special zone. Most special zone criteria in the Negotiated Agreement specify that wells be drilled: (1) at least 500 feet from the Truckee River, the Little Truckee River, and lakes or reservoirs located on these rivers; (2) at least 200 feet from perennial tributaries and lakes located on such tributaries; (3) at least 100 feet from any springs; and (4) at least 50 feet from ephemeral tributaries and lakes located on such tributaries. In zones overlying the Martis Valley Aquifer, the criteria would also specify casings down to 100 feet for wells located between 500 and 1,320 feet from the river. These criteria would supplement California standards for the design of water supply wells. TROA would provide for compliance with these requirements through notice and enforcement provisions. After the Negotiated Agreement is implemented, notice would be required before most wells<sup>22</sup> could be constructed. Wells constructed during the interim period between May 1, 1996, and implementation of the Negotiated Agreement would have to comply with P.L. 101-618 and the notice and enforcement provisions in the Negotiated Agreement, unless specifically excluded through listing in the Negotiated Agreement. (See section 10.B.1(e) of the Negotiated Agreement.) Wells may be included on this list by written request and approval of the mandatory signatories up until the agreement is signed.

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<sup>22</sup> Certain wells are excluded from notice requirements, e.g., domestic wells and monitoring wells.

### **3. Carson River Basin in California**

Confirmation of the interstate allocation of the Carson River basin (chapter 1) would not preclude the assertion of any additional water rights which could have been established prior to January 1, 1989, but which were not recognized in the *Alpine* decree, so long as the total amount of any such additional allocations does not exceed 1,300 and 2,131 acre-feet per year by depletion for use in California and Nevada, respectively. TROA would not affect the operation of the Carson River under the *Alpine* decree.

## **C. Water Operations and Facilities**

This section describes the water categories that would be created and managed under TROA, as well as Floriston Rate operations, reservoir operations, operation of TMWA's hydroelectric diversion dams, water exportation to Sierra Valley, M&I water resources for urban areas in California and Nevada, administration, and additional provisions unique to TROA.

### **1. Water Categories**

In addition to the water categories listed in table 2.2, TROA would also provide for the new Credit Water categories listed in table 2.7. TROA would establish priorities for accumulating, exchanging, releasing, displacing,<sup>23</sup> and spilling all water categories. This priority system would increase the likelihood that certain waters in a reservoir would be available when needed, avoid adverse effects to *Orr Ditch* decree water rights, improve minimum reservoir releases, and decrease the likelihood of adversely affecting Truckee River water quality.

TROA contains many provisions for (1) accumulating Credit Water in all reservoirs; (2) exchanging Credit Water among reservoirs; and (3) using and limiting the amount of Credit Water in storage.

#### **a. Accumulating Credit Water**

Credit Water could be accumulated in all reservoirs primarily by retaining Floriston Rate Water already in storage and by retaining inflow that would have otherwise been diverted downstream. It could also be accumulated by (1) trading water that has been released or is in storage for water that is stored in another reservoir or has been released; (2) converting water in storage from one category to another; and (3) with consent, using water rights of another party. Imported water and Private Water could also be used to accumulate Credit Waters. Credit Waters could be stored in any Truckee River reservoir without interfering with that reservoir's Project Water and generally would be retained until released or spilled.

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<sup>23</sup> "Displacement" is an operation whereby a water category of higher storage priority causes one of lower storage priority in the same reservoir to be exchanged, released, or spilled to the extent that both categories cannot be simultaneously stored in the reservoir.

**Table 2.7—TROA Credit Water categories, water right ownership, and uses**

Category	Owner	Use
Additional California Environmental Credit Water	California	Non-consumptive, stream and riparian environmental uses
California Environmental Credit Water	California	Non-consumptive, stream and riparian environmental uses
California M&I Credit Water	California entities	M&I demand and groundwater injection well recharge of aquifers in the Truckee River basin in California
Fernley Municipal Credit Water	Fernley	M&I, recharge and storage in the local aquifer, re-vegetation of former agricultural lands, improve water quality in local wetlands, or enhance Pyramid Lake fish flows
Fish Credit Water	United States and Pyramid Tribe	Benefit cui-ui in lower Truckee River/Pyramid Lake and LCT in the Truckee River basin
Fish Water <sup>1</sup>	United States and Pyramid Tribe	Same as Stampede Project Water and Prosser Project Water in table 2.2
Joint Program Fish Credit Water	United States and Pyramid Tribe	Managed by California to enhance streamflows in California and recreational pools in all reservoirs
Newlands Project Credit Water (replaces the name, Newlands Project Credit Storage, used in table 2.2)	United States	Used to refine diversions of Truckee River water to Lahontan Reservoir
Other Credit Water	Any applicant	As may be proposed
TMWA Emergency Credit Water <sup>2</sup>	TMWA	M&I use in TMWA's service area during a drought or emergency
TMWA M&I Credit Water (Firm and Non-Firm)	TMWA	M&I use in TMWA's service area during a drought or emergency
Project Water (combines Project Water and Private Water defined in table 2.2)	Holder of storage permits or licenses	Same as Project Water and Private Water in table 2.2, except may also be used to establish Credit Water
Project Water in Another Reservoir	Original holder of storage permits or licenses	Same use as the initial Project Water
Water Quality Credit Water (replaces the name, Water Quality Water, used in table 2.2)	Reno, Sparks, Washoe County, United States and Pyramid Tribe	Improve Truckee River water quality by enhancing Truckee River flow downstream from Sparks, Nevada

<sup>1</sup> Fish Water is not a Credit Water category, but is listed here because of its numerous interactions with Credit Waters. It may only be reclassified when restored in or exchanged to another reservoir as Fish Credit Water or Project Water in Another Reservoir, and it may only be used for the benefit of cui-ui and LCT, and released as minimum releases from Stampede Reservoir.

<sup>2</sup> The term "TMWA Emergency Drought Supply" is used in the Negotiated Agreement.

### ***b. Exchanging Credit Waters Among Reservoirs***

Water stored in any Federal or non-Federal reservoir could be exchanged with water stored in any other Federal or non-Federal reservoir within the Lake Tahoe and Truckee River basins. Also, a scheduled release from one reservoir could be substituted for a release from another reservoir, the respective water accounts in each reservoir would be

credited and debited accordingly, and water would not be physically moved. Exchanges would be the main procedure for enhancing the availability of Credit Water, enhancing streamflows, reducing spill potential, and maintaining reservoir recreational pools.

**c. Credit Water Accumulation, Storage, and Use Limitations**

Each Credit Water category would have specific accumulation, storage, and use limitations.

**(1) California Environmental Credit Water and Additional California Environmental Credit Water**

California could accumulate up to 8,000 acre-feet of California Environmental Credit Water and 10,000 acre-feet of Additional California Environmental Credit Water with diversion rights acquired in California and Nevada or *Sierra Valley* decreed water rights.

California could use these categories of Credit Water only to benefit non-consumptive stream and riparian environmental uses, not for recreational pools or to mitigate any adverse effects of TROA. Once released and not re-stored, water associated with water rights originating in California would be available for diversion in Nevada, while that from water rights in Nevada would flow to Pyramid Lake.

**(2) California M&I Credit Water**

California entities could use a portion of California's Truckee River surface water allocation to accumulate California M&I Credit Water, which could be released later to serve M&I demand and groundwater recharge in the upper Truckee River basin.

Once California M&I Credit Water is accumulated in Lake Tahoe (up to 8,000 acre-feet) it could be exchanged to other Federal reservoirs, to a maximum of 3,000 acre-feet. Water to serve the purposes of California M&I Credit Water could also be accumulated in any new facilities built in California in the future for that purpose, but storage for California M&I Credit Water in Federal reservoirs would be reduced by the amount of water that California accumulates in excess of 2,500 acre-feet in any new facilities. Accumulation would also have to comply with additional terms and conditions that SWRCB might establish.

**(3) Fernley Municipal Credit Water**

Fernley could use its changed diversion rights and privately owned water to accumulate Fernley Municipal Credit Water in Federal reservoirs. If a drought situation<sup>24</sup> does not exist by April 15, any Fernley Municipal Credit Water accumulated in excess of 10,000 acre-feet on April 1 of the same year would then be converted to Fish Credit

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<sup>24</sup> A drought situation would exist when the April 15 run-off forecast for the Truckee River indicates there would not be sufficient unregulated water and Floriston Rate Water to maintain Floriston Rates through the water year (October through September), or if the elevation of Floriston Rate Water in Lake Tahoe is forecast to drop below 6223.5 feet Lake Tahoe datum before November 15.

Water. Storage of Fernley Municipal Credit Water would not be limited during a drought situation. Fernley would only use this water for M&I use in the Fernley area, recharge of or storage in the local aquifer, to re-establish vegetation on former agricultural lands, improve water quality in local effluent-based wetlands, or enhance Pyramid Lake fish flows.

#### **(4) Fish Credit Water**

The United States and the Pyramid Tribe would only use this water for the benefit of cui-ui in the lower Truckee River/Pyramid Lake and LCT in the Truckee River basin. Under limited circumstances, however, a small amount of Fish Credit Water could be temporarily reserved for Non-Firm M&I Credit Water purposes (See “TMWA M&I Credit Water”).<sup>25</sup>

Fish Credit Water could be accumulated in four ways: (1) retention of water otherwise used only to satisfy TMWA’s hydroelectric water rights;<sup>26</sup> (2) capture of Pyramid Tribe Appropriated Water; (3) conversion of Stampede Project Water, Prosser Project Water or Credit Water already in storage; and (4) expansion of the Stampede Reservoir storage license to allow a maximum of 226,500 acre-feet to be captured annually in Stampede Reservoir.<sup>27</sup> An unlimited amount of Fish Credit Water could be accumulated.

#### **(5) Joint Program Fish Credit Water**

A portion of Fish Credit Water (not to exceed 50 percent each year),<sup>28</sup> up to the amount of California’s Truckee River surface water allocation that is not diverted, could be reserved as Joint Program Fish Credit Water. California would manage this Credit Water to enhance streamflows in California and recreational pools in Federal reservoirs. However, no more than 20,000 acre-feet of Joint Program Fish Credit Water could be stored in Federal reservoirs at any given time. Once released and not exchanged or restored, this water would flow unimpaired to Pyramid Lake.

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<sup>25</sup> This is a safeguard against storing large volumes of Fish Water and Fish Credit Water in Stampede Reservoir during normal and low water years which would prevent TMWA from storing TMWA M&I Credit Water up to prescribed base amounts. The reservation would occur when Lake Tahoe is at or below 6,227 feet on November 15 and less than 20,000 acre-feet of Non-Firm M&I Credit Water, Fish Credit Water and Fish Water have spilled from Stampede in the previous 12 months. See Section 8.F.6 of the Negotiated Agreement for more details.

<sup>26</sup> TMWA would waive its single purpose hydroelectric water rights (*Orr Ditch* decree Claim Nos. 5-9) when Floriston Rate Water is required solely to generate hydroelectric power at its four Truckee River hydroelectric powerplants. This means that no water right holder other than TMWA would require this water at the time, and as such, it would flow to Pyramid Lake after diversion through the hydroelectric powerplants. The waiver would allow Fish Credit Water to be accumulated from Floriston Rate Water in storage or being passed through the reservoir. In order to implement this waiver, either *Orr Ditch* decree Claims Nos. 5-9 or Pyramid Tribe Appropriated Water right would be modified.

<sup>27</sup> SWRCB must approve a modification of the Stampede Reservoir storage permit to allow an additional 100,000 acre-feet of Project Water to be captured annually in Stampede Reservoir. Under the terms of TROA, however, this water would be Fish Credit Water.

<sup>28</sup> Excludes Fish Credit Water created through conversion of Credit Water or Project Water.

**(6) Newlands Project Credit Water**

As under No Action, Newlands Project Credit Storage, now referred to as Newlands Project Credit Water, could be accumulated and managed. TROA would also provide additional opportunities for accumulating and managing Newlands Project Credit Water. If credit water elements of OCAP were to be repealed or modified so as to impair achieving the purpose of credit water (see “Stampede Reservoir” under the description of No Action), TROA would provide procedures for the continued accumulation and management of Newlands Project Credit Water.

In addition to Newlands Project Credit Water operations allowed under OCAP, TROA would allow from November through June a portion of Truckee River flow scheduled to be diverted to the Newlands Project to be accumulated as Newlands Project Credit Water by (1) exchanging with Fish Credit Water in storage for an equal amount of water at Derby Diversion Dam that would then flow to Pyramid Lake or (2) retaining in storage a portion of a scheduled release or pass-through of Floriston Rate Water that would otherwise have been diverted at Derby Diversion Dam. Newlands Project Credit Water accumulated in this manner, would be released as required by OCAP (as much as possible before August 1) to achieve Lahontan Reservoir storage targets. Newlands Project Credit Water not required for diversion to the Newlands Project would be reclassified to the water category it would have been at the time it was stored.

**(7) Other Credit Water**

In anticipation of future requests to use any remaining storage space, TROA would provide for the category of Other Credit Water in all reservoirs.

**(8) TMWA M&I Credit Water**

TMWA could accumulate TMWA M&I Credit Water using the consumptive use portion of its *Orr Ditch* decree water rights and TMWA Private Water not needed to meet the M&I demand in its service area.

**(a) Firm and Non-Firm M&I Credit Water**

TMWA M&I Credit Water would be classified as either Firm or Non-Firm. Firm M&I Credit Water could be stored only in Stampede Reservoir, while Non-Firm M&I Credit Water could be stored in any Truckee River reservoir. Compared to most categories of Credit Water, Firm M&I Credit Water would be a relatively secure supply because, among other things, it would have a higher priority to be stored in Stampede Reservoir than Fish Water. Non-Firm M&I Credit Water would be less secure than Firm M&I Credit Water because it could not interfere with storage or release of Project Water, except Fish Water under certain drought circumstances.

The amount of Firm and Non-Firm M&I Credit Water stored and carried over from one year to the next would be calculated based on M&I demand in TMWA’s service area, the amount of water used in the Truckee River basin in California, and the existence of a drought situation. As M&I demand for Truckee River water in Truckee Meadows increases and as California’s M&I use increases, the carryover limit for Firm M&I Credit

Water would increase from 2,000 acre-feet to 12,000 acre-feet, and the carryover limit for Non-Firm M&I Credit Water would increase from 4,000 acre-feet to 20,000 acre-feet. (See Appendices 7.A, 7.B, and 7.C of the Negotiated Agreement.) On April 15 of each year when a drought situation does not exist, all Non-Firm M&I Credit Water in excess of the April 1 carryover limit would be converted to Fish Credit Water. However, when a drought situation exists on April 15, TMWA could retain any Non-Firm M&I Credit Water already in storage to serve M&I demand until that drought situation ends, or until the following April 15, whichever is later.

TMWA M&I Credit Water would be stored until needed to supply the current M&I demand during a drought situation or converted to Fish Credit Water. In addition to the drought situation requirement, this water may only be used when TMWA's normal water supplies<sup>29</sup> are insufficient to meet the normal water year M&I demands, and TMWA has exhausted its Private Water in Donner Lake and water in excess of 7,500 acre-feet in Independence Lake. TMWA M&I Credit Water may be used without restriction during an emergency or repair situation.<sup>30</sup>

***(b) TMWA Emergency Credit Water***

TMWA could accumulate up to 7,500 acre-feet of TMWA Emergency Credit Water in Stampede Reservoir by either (1) re-storing Private Water in Stampede Reservoir; (2) accumulating water from changed diversion rights; or (3) converting the first Fish Credit Water accumulated in Stampede Reservoir. This category would not spill and not be required to be released for minimum streamflows. TMWA could release this water for M&I purposes during an emergency or repair situation or a drought situation after it had exhausted its normal water supplies and its TMWA M&I Credit Water and, to the extent permitted, pumped 5,000 acre-feet of water from Independence Lake. (See "Reservoir Pumping.")

***(c) Toilet Replacement Water***

Water conserved in Truckee Meadows through Washoe County's toilet replacement program would be accumulated (up to 4,000 acre-feet per year) and used as Non-Firm M&I Credit Water. When the storage of conserved water causes Non-Firm M&I Credit Water to exceed its carryover limit on April 1, the conserved water would be converted to Water Quality Credit Water.

**(9) Project Water in another Reservoir**

In general, Project Water exchanged to another reservoir would be retained for its original purpose but would be classified as a Credit Water category with less security from spill or evaporation than most Credit Waters. Project Water in Another Reservoir is usually reclassified as Project Water when exchanged back to its reservoir of origin.

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<sup>29</sup> TMWA's normal water supplies, as defined in the Negotiated Agreement, are the water sources that TMWA ordinarily uses in the absence of a drought to meet its customer M&I demands.

<sup>30</sup> "Emergency or repair situation" means any circumstance when scheduled alteration or repair of TMWA's water storage or delivery system prevents use of some of its normal water supplies to meet customer demand.

### **(10) Water Quality Credit Water**

Under TROA, Water Quality Water would be renamed Water Quality Credit Water. This category of Credit Water could be stored in all reservoirs. As under the other alternatives, Reno, Sparks, Washoe County, United States, and the Pyramid Tribe would manage this water under TROA in accordance with WQSA.<sup>31, 32</sup>

## **2. Floriston Rates**

Accumulating and releasing Floriston Rate Water to serve *Orr Ditch* decree water rights would continue to be the foundation of Lake Tahoe and Boca Reservoir operations. TROA would allow flows associated with Floriston Rates to be reduced to create Credit Water. Parties to TROA holding *Orr Ditch* decree water rights would be allowed to withhold releases of Floriston Rate Water that would otherwise have been subject to diversion from the Truckee River (or tributaries) to serve those water rights.

## **3. Reservoir Operations**

Credit Water operations would not interfere with Project Water operations (except for water rights voluntarily relinquished), flood control operations, or dam safety requirements.

### **a. Accumulation, Storage, and Release**

#### **(1) Lake Tahoe and Boca Reservoir**

Except for Credit Water operations, including exchange of Floriston Rate Water, operation of Lake Tahoe and Boca Reservoir would be similar to that under No Action and LWSA.

#### **(2) Donner Lake**

Private Water in Donner Lake would continue to be stored and released under TROA as under No Action and LWSA. (See footnote 12 in this chapter.) TROA would also allow TMWA Private Water in Donner Lake to be exchanged with Credit Waters from other reservoirs. California, with the approval of any non-signatory party with Private Water in Donner Lake (currently only TCID), could also arrange an exchange of their Private Water with Joint Program Fish Credit Water, California Environmental Credit Water, or Additional California Environmental Credit Water from other reservoirs.

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<sup>31</sup> In order to prevent Credit Water operations from diminishing water quality downstream from Sparks, Nevada, several categories of Credit Water would not be allowed to accumulate in Truckee River reservoirs when flows of Floriston Rate Water at the Sparks gauge are less than 275 cfs during the summer and fall or less than 120 cfs during the winter and spring. See section 7.A.5 of the Negotiated Agreement for details.

<sup>32</sup> Pursuant to an agreement dated February 13, 2007, between Reno, Sparks, Washoe County, and the Pyramid Tribe to provide 6,700 acre-feet of water rights for water quality water purposes, the cities and county agreed in the Negotiated Agreement to provide such water no later than when TROA takes effect.



**(3) Prosser Creek Reservoir**

As under No Action and LWSA, Prosser Project Water would continue to be dedicated first to TPEA and then to maintaining minimum releases from Prosser Creek Reservoir, with the remaining Prosser Project Water used for the benefit of Pyramid Lake fishes. Under TROA, however, the remaining Prosser Project Water could continue to be used for Pyramid Lake fishes even if the fish are no longer listed under the Endangered Species Act of 1973, as amended (ESA). TROA would also allow the United States to apply to SWRCB to eliminate the 20,162 acre-foot per year limit on releases from Prosser Creek Reservoir, though the minimum pool requirement would remain in effect. (See “Minimum Fish Pools.”) Reclamation has submitted an application to SWRCB in advance of TROA becoming effective, but the proposed change would not become effective unless and until TROA is executed and, by its terms, becomes effective.

**(4) Independence Lake**

Private Water in Independence Lake would continue to be stored and released to serve M&I demand under TROA as under No Action and LWSA. However, during a drought situation when storage in Independence Lake is less than 7,500 acre-feet, TMWA could only release its water to maintain minimum streamflows, for emergencies, or to meet customer demands when its water from Donner Lake and TMWA M&I Credit Water are insufficient.

TROA would require the United States and California to exchange water with TMWA to maintain Independence Lake at an elevation that would allow LCT to move to upstream spawning habitat. As under the Interim Storage Agreement, California could direct TMWA to provide and maintain a fish channel through the Independence Creek delta when storage is forecast to be below 7,500 acre-feet during the summer. The Interim Storage Agreement would terminate with TROA, and TMWA Interim Storage (table 2.2) under No Action and LWSA would be replaced with TMWA M&I Credit Water.

**(5) Stampede Reservoir**

As under No Action and LWSA, Stampede Project Water would continue to be managed for minimum releases from Stampede Reservoir and for the benefit of Pyramid Lake fishes. Under TROA, however, Stampede Project Water would continue to be used for Pyramid Lake fishes even if they are no longer listed under ESA. TROA would also allow the United States to apply to SWRCB to increase Stampede Reservoir’s California Water Right to a maximum diversion to storage of 226,500 acre-feet annually, of which only the first 126,000 acre-feet could be stored as Stampede Project Water and the remainder as Fish Credit Water. Reclamation has submitted an application to SWRCB in advance of TROA becoming effective, but the proposed change and appropriation would not become effective unless and until TROA is executed and, by its terms, becomes effective. As under No Action and LWSA, water stored in Stampede Reservoir under TROA could only be used to generate electricity at Stampede Dam’s two hydroelectric powerplants incidental to its release for other purposes.

**(6) Martis Creek Reservoir**

Operation of Martis Creek Reservoir would be the same as under No Action and LWSA.

**(7) Lahontan Reservoir**

Operation of Lahontan Reservoir would be the same as under No Action and LWSA, except for the addition of the opportunity to accumulate and manage Newlands Project Credit Water. (See “Newlands Project Credit Water.”)

**b. Recreational Pools**

As under No Action and LWSA, TROA would not require recreational pools to be maintained, but would provide opportunities under California Guidelines to voluntarily achieve and maintain recreational pools in certain reservoirs. (See “California Guidelines.” Also, see exhibit D in the attachment to chapter 2 for a sample of the California Guidelines.)

**c. Minimum Fish Pools**

As a protection mechanism for fish, TROA would require that releases of Credit Water and Project Water from Prosser Creek Reservoir not allow storage to fall below 5,000 acre-feet or such lesser amount as determined by the California Department of Fish and Game to better service fishery resources.

**d. Minimum Reservoir Releases**

Minimum releases from all reservoirs, except Prosser Creek Reservoir and Independence Lake, to maintain streamflows would be the same as under No Action and LWSA (table 2.4). TROA, however, would provide more opportunities to achieve minimum releases and more opportunities to provide greater-than-minimum releases (i.e., enhanced minimum releases).

**(1) Prosser Creek Reservoir**

Under TROA, a minimum release of 5 cfs would be maintained from Prosser Creek Reservoir to the extent water is available, even if inflow to the reservoir is less than the minimum release.

**(2) Independence Lake**

Compared to No Action and LWSA, TROA would require greater minimum releases from Independence Lake that would not be subject to exchange and re-storage rules for enhanced minimum releases. (See “Enhanced Minimum Releases.”) These releases would vary with the month and volume of water stored. During a normal season (defined in table 2.8), minimum releases would be increased by 0 to 6 cfs above the No Action minimum release of 2 cfs as long as at least 12,500 acre-feet are in storage. When storage is below this amount but greater than 7,500 acre-feet, releases would be maintained so that the average Independence Creek flow would be at least 0 to 6 cfs greater than the minimum flows under No Action. Under these circumstances, however, not less than 2 to 4 cfs would be released from storage. No additional releases would be

**Table 2.8—Enhanced minimum releases (cfs) from specified reservoirs during normal<sup>1</sup> and dry<sup>2</sup> seasons (these releases include minimum releases shown in table 2.4)**

Reservoir/lake	Normal season	Dry season
Tahoe	75	<sup>3</sup> 37.5
Donner	8	4
Prosser Creek		
September - February	25	8
March - August	12	8
Stampede	45	<sup>4</sup> 22.5

<sup>1</sup> “Normal” season is a monthly characterization of water conditions when either the amount of Floriston Rate Water stored in Lake Tahoe or the April through July forecast for the California Truckee River basin supply is “moderate to high.” (See figures 9-1 through 9-10 of the Negotiated Agreement.)

<sup>2</sup> “Dry” season is a monthly characterization of water conditions when either the amount of Floriston Rate Water stored in Lake Tahoe or the April through July forecast for the California Truckee River basin supply is “low.” (See figures 9-1 through 9-10 of the Negotiated Agreement.)

<sup>3</sup> The greater of 37.5 cfs or the minimum release.

<sup>4</sup> The greater of 22.5 cfs or the minimum release.

made when storage is less than 7,500 acre-feet. During a dry season (defined in table 2.8), additional releases up to 2 cfs would be made only when storage is greater than 7,500 acre-feet.

### **(3) Enhanced Minimum Releases**

During normal and dry seasons, Credit Water and Project Waters could be used to enhance minimum releases.<sup>33</sup> These waters would supplement minimum releases shown in table 2.4 to achieve the enhanced minimum release shown in table 2.8. These waters could only be used to enhance minimum releases if they could be re-stored in another reservoir or exchanged for water in another reservoir.

#### ***e. Flood Control Operations and Dam Safety Requirements***

Flood control operations and dam safety requirements would be the same as under No Action and LWSA.

#### ***f. Spills, Conveyance Losses, and Evaporative Losses***

Because more than one water category could be in a reservoir when the reservoir begins to spill, TROA would establish the order in which the water categories would spill (table 2.9). Firm M&I Credit Water and TMWA Emergency Credit Water would not

<sup>33</sup> An owner of Private Water not signatory to TROA could choose, but it is not required, to use its water to maintain enhanced minimum releases.

**Table 2.9—Water spill order (first to last)<sup>1</sup>**

1.	Other Credit Water and Additional California Environmental Credit Water
2.	Newlands Project Credit Water
3.	Project Water in Another Reservoir
4.	Water Quality Credit Water and Fernley Municipal Credit Water
5.	California Environmental Credit Water
6.	California M&I Credit Water
7.	Fish Credit Water, Joint Program Fish Credit Water, and Non-Firm M&I Credit Water <sup>2</sup>
8.	Project Waters from their respective reservoirs <sup>3</sup>

<sup>1</sup> Where two or more categories appear, they generally share equally.

<sup>2</sup> The spill order within this group varies with the type of water year.

<sup>3</sup> Prosser Project Water reserved for Pyramid Lake fishes would spill before that reserved for minimum releases, then TMWA Emergency Credit Water, and last would be Tahoe-Prosser Exchange Water.

spill. In general, the Administrator would allocate stream channel conveyance losses proportionally among the water categories in the channel and evaporative losses proportionally to each water category in storage, except that Private Water would not suffer conveyance losses and Firm M&I Credit Water, TMWA Emergency Credit Water, Tahoe-Prosser Exchange Water (or Project Water in Another Reservoir<sup>34</sup>), and dead and inactive storage<sup>35</sup> would not evaporate until they are the last categories in storage, and then in the order presented here. Fish Water and Fish Credit Water would compensate for evaporative and conveyance losses of Newlands Project Credit Water.

#### ***g. Reservoir Pumping***

Under certain conditions, permission could be sought to pump (or siphon) water from Lake Tahoe and Independence Lake.

##### **(1) Lake Tahoe**

Pumping or other means could be used to remove water from Lake Tahoe to the Truckee River for M&I purposes only when all of the following conditions are met: (1) TMWA's M&I water supply is less than that provided during the 1928-1935 period,<sup>36</sup> (2) water could not be released by gravity (i.e., lake elevation is below the rim); (3) the action complies with applicable Federal and California laws (e.g., NEPA, CEQA, Clean Water Act, and water right laws); and (4) the Secretary of the Interior, Governor of California, and Governor of Nevada concur.

<sup>34</sup> This category only relates to Floriston Rate Water from Lake Tahoe that is stored in Stampede Reservoir.

<sup>35</sup> This is storage in a reservoir that cannot be released by gravity flow.

<sup>36</sup> This time period is referred to in the Negotiated Agreement as the "critical drought period."

## **(2) Independence Lake**

TMWA could pump water from Independence Lake to Independence Creek only when all of the following conditions are met: (1) water cannot be released sufficiently by gravity; (2) TMWA holds necessary permits; and (3) an emergency or drought situation exists.

### ***h. Emergencies***

As under No Action and LWSA, Federal, State, or local government agencies would continue to respond to emergencies involving facilities or resources addressed in TROA. The Administrator would be authorized to take actions necessary to respond to an emergency.

## **4. TMWA's Hydroelectric Diversion Dams**

TMWA's hydroelectric diversion dams (Farad, Fleish, Verdi, and Washoe) would be operated under TROA similar to No Action, except that the minimum bypass flow at each would be 50 cfs. The United States and the Pyramid Tribe, under certain conditions and at their discretion, could supplement the minimum bypass flows with the release of Fish Water.<sup>37</sup> Implementation of the TROA minimum bypass flow provision for the Farad Diversion Dam depends on a revision of the 150-cfs minimum bypass flow described under No Action.<sup>38</sup>

TMWA would continue to be allowed to divert water from the Truckee River during December-February as needed to remove ice from the Highland Ditch. TROA, however, would allow Fish Credit Water and Fish Water to be released and bypassed for streamflow to compensate for this diversion.

## **5. Water Exportation from Little Truckee River to Sierra Valley**

Exporting water from the Little Truckee River to Sierra Valley would be the same as under No Action and LWSA. In addition, TROA recognizes that, if an agreement were negotiated with holders of rights to the Sierra Valley diversion, to transfer water or water rights pursuant to California law, any water so transferred could be retained in the Truckee River basin and stored as Credit Water.

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<sup>37</sup> Under TROA, the rate at which Fish Water must be bypassed at each hydroelectric powerplant diversion dam to supplement minimum bypass flows depends on the season and the rate at which Fish Credit Water, Other Credit Water owned by the United States, and Newlands Project Credit Water are being captured in storage at the time. Up to 50 cfs of Fish Water (October–April) or up to 150 cfs (May–September) may be released for such supplementation.

<sup>38</sup> According to term and condition No. 12 of SWRCB's 401 Certification for the Farad Diversion Dam Replacement Project proposed by Sierra Pacific Power Company, "SPPC shall maintain a minimum flow of 150 cfs in the bypass reach below the diversion dam, or total Truckee River flow immediately upstream of the diversion dam, whichever is less, in the operation area. The SWRCB may, in its discretion, revise this flow requirement to take into account relevant TROA provisions, if information in the final EIS/EIR [for TROA] indicates that a revised flow is more effective than Condition 6-3 [same as item 12]."

## **6. Municipal and Industrial Water Resources**

### **a. TMWA**

As under No Action and LWSA, TMWA would continue to exercise its existing water rights and expand its conservation and acquisition programs. In addition, TROA would not prevent TMWA from (1) acquiring Truckee River basin water rights in addition to those necessary to meet its normal water year demand of 119,000 acre-feet, (2) importing water to the Truckee River basin, and (3) developing groundwater rights in excess of 15,950 acre-feet. Such actions, however, could not adversely affect water rights of the Pyramid Tribe or the United States, and TMWA would comply with all applicable Federal, State, and local laws.

#### **(1) Exercise of Existing Water Rights**

TMWA would continue to exercise, as under No Action and LWSA, its: (1) right under TRA to divert up to 40 cfs from the Truckee River, (2) rights to surface flows of Hunter Creek, (3) Private Water in Donner Lake and Independence Lake, and (4) former irrigation water rights addressed in the next paragraph.

#### **(2) Transfer of Irrigation Water Rights to M&I Use**

As under No Action and LWSA, developers in Truckee Meadows would continue to purchase and dedicate irrigation water rights to TMWA for new water service. Because TROA would require 1.11 acre-foot of water rights for every acre-foot of new service commitment (versus 1.00 acre-foot per acre-foot of commitment under No Action and LWSA) and because TROA requires that water conserved by retrofitting residences with water meters not be used to serve customers during normal water years, TMWA anticipates that under TROA developers would provide an additional 36,380 acre-feet by 2033 (10,520 acre-feet more than under No Action and LWSA). This extra water would be used to accumulate TMWA M&I Credit Water. This requirement would remain in effect until TMWA's normal water year supply from all TROA-related sources<sup>39</sup> reached 119,000 acre-feet. This excess water would be used to store TMWA M&I Credit Water during non-drought years and to serve its customers during drought situations.

TMWA could attempt to supplement its water rights by acquiring TCID's right in Donner Lake which it could then manage as provided under TROA to increase its drought supply. TMWA could seek permission to pump up to 2,000 acre-feet from the Sparks Marina Lake when making emergency repairs or during a drought situation.

#### **(3) Pumping Truckee Meadows Groundwater**

Under TROA, TMWA likely would pump up to 12,570 acre-feet of groundwater from the Truckee Meadows aquifer during normal water years and up to 15,950 acre-feet during drought situations.

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<sup>39</sup> TMWA could use resources not covered by TROA (e.g., imported water), to serve its customers.

#### **(4) Water Conservation**

TMWA would not use water saved by the M&I conservation practices to serve existing and new water customers during normal water years unless agreed to by the Pyramid Tribe and the Secretary, and unless applicable laws are changed. TROA would require that water conserved by retrofitting residences with water meters not be used to serve water customers during normal water years. In addition to the normal water year conservation program (10 percent annual savings target), TMWA anticipates that an additional 5 percent would be saved during drought situations under TROA.

##### **b. Fernley**

The same amount of surface water and groundwater would be used to serve M&I demand in the vicinity of Fernley under TROA as under No Action and LWSA. Fernley Municipal Credit Water would be used for M&I demand, environmental purposes, and recharging the local aquifer.

##### **c. Lake Tahoe Basin in Nevada**

As under No Action and LWSA, surface water would continue to be diverted from tributaries entering Lake Tahoe and pumped from Lake Tahoe and the local aquifers to serve M&I demand in the Lake Tahoe basin in Nevada.

##### **d. Truckee River and Lake Tahoe Basins in California**

As under No Action and LWSA, surface water would continue to be diverted and groundwater pumped from local aquifers to serve M&I demand in California. California anticipates that the annual demand for water (both surface and ground) in the upper Truckee River and Lake Tahoe basins by 2033 would be the same under TROA as under No Action and LWSA, though the water source under TROA would differ from that under No Action (table 2.5). Annual use of upper Truckee River basin surface water rights likely would increase from the current 2,800 acre-feet to 4,300 acre-feet, while annual groundwater pumping in basin likely would increase from the current pumping rate of 7,570 acre-feet to 18,400 acre-feet (rather than 19,600 acre-feet under No Action). As under No Action and LWSA, annual water usage in the Lake Tahoe basin in California under TROA likely would increase from the current 18,700 acre-feet to 23,000 acre-feet.

#### **7. Administration, Accounting, and Scheduling**

The Administrator would be responsible for carrying out the terms and conditions of TROA. Primary responsibilities would be to (1) classify Credit Waters as they are stored; (2) keep records of and prepare reports covering water storage, release, exchange and use; (3) schedule and coordinate operations; (4) ensure that Credit Waters are used for their designated purposes; and (5) coordinate with the Federal Water Master to avoid conflicts with water rights under the *Orr Ditch* decree. The Federal Water Master would continue to be responsible for administering the provisions of the *Orr Ditch* decree and would become the first TROA Administrator. The Truckee River Special Hearing

Officer would be appointed by a four-member committee—representing United States, California, Nevada, and the Pyramid Tribe—to resolve disputes arising under TROA.

**a. *Scheduling***

Water managers would formulate water storage and release schedules, and the Administrator would combine all such schedules into an operating plan for Truckee River reservoirs to satisfy the exercise of water rights and minimum streamflows.

**b. *Accounting***

TROA would provide criteria for developing and maintaining a water accounting system. Accounting requirements identified in P.L. 101-618 for surface water and groundwater use in the Lake Tahoe and Truckee River basins would be established to determine compliance with the interstate allocations.

**c. *Cost of Administration***

United States, California, and Nevada would share the cost of administration (40, 20, and 40 percent, respectively).

**8. *Additional Elements Unique to TROA***

**a. *California Guidelines***

California would issue each year a set of streamflow, reservoir storage level, and other environmental objectives for reservoir operations that would enhance fish habitat, riparian vegetation, water quality, and recreational opportunities in the upper Truckee River basin. Although not mandatory, the Administrator would encourage the parties to consider the guidelines in their scheduling consistent with their water rights and provisions of TROA.

**b. *Habitat Restoration Fund***

Parties to TROA would provide \$50,000 to \$100,000 per year for 30 years to a habitat restoration fund. California would receive the money during the first 2 years. During the following 28 years, the money would be given annually to California, Nevada, or the Pyramid Tribe until each received 10 yearly allocations. The fund would be used for fish habitat restoration or to maintain projects in the Truckee River basin. The three parties are encouraged to leverage their distributions with any other funds under their control, and with donations and grants.

**c. *Storage Contract and Hydroelectric Compensation***

Any party accumulating Credit Water in Federal reservoirs under TROA, except United States and the Pyramid Tribe, and California in relation to Joint Program Fish Credit Water, would be required to have a storage contract with United States. Storage contracts are one of the administrative mechanisms needed to implement TROA. As TROA is signed, accepted by the courts, and implemented, storage contracts also would be



executed to effectuate the storage aspects of TROA. The environmental effects of TROA and, by extension, these storage contracts, are analyzed in this final EIS/EIR. Contracts for TMWA, Reno, Sparks, Washoe County, California, and Fernley to use Federal reservoirs under Reclamation's jurisdiction would be for 40 years, and renewable every 40 years thereafter as long as TROA is in effect. Renewal would be conditioned on re-negotiation of storage fees. Storage fees would be used according to section 205(b)(2) of P.L. 101-618: first to pay for the operation and maintenance costs of Stampede Reservoir, and secondly for the Lahontan Valley and Pyramid Lake Fish and Wildlife Fund created under section 206(f) of P.L. 101-618.

TMWA could also impose storage fees consistent with the Negotiated Agreement for Credit Water in Independence Lake and in its portion of Donner Lake. Washoe County Water Conservation District would be compensated for the incremental increase in operation and maintenance costs associated with Boca Reservoir due to Credit Water and Stampede Project Water operations.

Agreement would be reached with TMWA regarding compensation for reduction in hydroelectric power generation, if any, arising from the operation of Fish Credit Water, Newlands Project Credit Water, Other Credit Water, some California Environment Credit Water, and releases of Fish Water for streamflow immediately downstream (bypass flow) from each hydroelectric powerplant diversion dam. TMWA would waive compensation for operation of Water Quality Credit Water, Fernley Municipal Credit Water, and California M&I Credit Water.

***d. Mitigation***

TROA would include measures, as necessary, to reduce or avoid significant adverse environmental effects, if any, resulting from implementation of the Negotiated Agreement.

***e. California Public Trust Doctrine***

Section 1.A.2 of the Negotiated Agreement declares that TROA is intended to implement California's responsibilities under the public trust doctrine by effecting a balancing between recreation, streamflows, and other public trust uses of water with the requirements of P.L. 101-618. The public trust doctrine requires the State to protect public trust uses, to balance between public trust uses and consumptive uses when allocating water, and to avoid or minimize harm to public trust resources where feasible. Section 1.A.3 of the Negotiated Agreement acknowledges that California will evaluate impacts to resources protected by the public trust when it considers the final EIS/EIR and makes the findings required by CEQA. SWRCB will consider public trust when considering any projects discussed in the final EIS/EIR that require its approval.

***f. Certain Credit Waters***

Section 205(a)(3) of P.L. 101-618 provides great flexibility for TROA to accommodate other actions to provide benefits beyond those originally contemplated in the Preliminary

Settlement Agreement as Modified by the Ratification Agreement. TROA makes use of this flexibility, including the “...may include, but is not limited to...” language at section 205(a)(3) and addresses provisions that could improve operations to even better provide for protection and enhancement of fish listed under the Endangered Species Act (205(a)(3)(D)), enhance instream beneficial uses (205(a)(3)(G)), and accommodate California’s allocation of Truckee River water (205(a)(3)(I)) through Credit Water provisions. Specifically, the Negotiated Agreement provides for California Environmental Credit Water, California Additional California Environmental Credit Water, and Other Credit Water. In each case, further action (beyond TROA being signed and entering into effect) would be required to implement these provisions (i.e., storage contracts in the case of the California categories and possibly Other Credit Water); proposals for their use have not yet been specified.

***g. Adjusting Operations or Changing the Negotiated Agreement***

TROA would provide procedures for adjusting reservoir operations and operational policies. However, section 205(a)(5) of P.L. 101-618 mandates that the Negotiated Agreement can only be changed in the same manner as it was originally developed.

**D. Change Petitions and Water Right Applications**

California water right licenses for Prosser Creek Reservoir, Independence Lake, and Boca Reservoir, and California water right permit for Stampede Reservoir must be changed to allow water categories other than those currently described in the licenses or permit to be captured and stored in these reservoirs. Because the parties to the Negotiated Agreement consider such changes necessary to accomplish the purposes of TROA (Article Twelve of the Negotiated Agreement), it could not enter into effect unless SWRCB approved the related change petitions.<sup>40</sup>

Under TROA, the Secretary would file water right applications with SWRCB to increase the amount of Stampede Project Water captured in Stampede Reservoir and remove the release limit from Prosser Creek Reservoir. (See “Prosser Creek Reservoir” and “Stampede Reservoir.”) These applications would allow for increased storage and retention of Fish Credit Water until needed by Pyramid Lake fishes. Because the parties to the Negotiated Agreement consider such applications useful, but not essential, to accomplish the purpose of TROA, TROA would enter into effect even if SWRCB did not approve these water right applications.<sup>41</sup>

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<sup>40</sup> Change petitions would request additional points of diversion, additional purposes of use, and expanded places of use in both California and Nevada. Reclamation has also filed two time extension petitions for Stampede Reservoir to seek time for the changes to be implemented and water to be put to beneficial use.

<sup>41</sup> Provisions of the Negotiated Agreement dependent on the approval of the SWRCB would not enter into effect.

TROA would include measures as necessary to reduce or avoid significant adverse environmental effects, if any, from its implementation.

## **V. Alternatives Considered and Rejected**

As discussed previously in Section I.B, numerous alternatives were evaluated to assist the negotiators in developing an operating agreement. Constructing a new reservoir was not considered as an alternative because it would have exacerbated degradation of riverine fish and riparian habitat as well as created additional cumulative environmental impacts throughout the Truckee River basin.

In January 1996, a Report to the Negotiators was completed and circulated to all negotiators. The document was originally expected to serve as the DEIS/EIR for TROA. However, during review of the draft document, the TROA EIS/EIR Management Team concluded that numerous issues, whose environmental effects were indeterminate, were still being negotiated and it was premature to issue a DEIS/EIR for public review. Consequently, the title of the document was modified, and its distribution was restricted to the negotiators. The Report to the Negotiators served three purposes: (1) to provide analytical information requested by the negotiators; (2) to highlight issues raised during public scoping; and (3) to provide the negotiators with additional information on potential impacts of proposals being considered. In the chapter 2 attachment, exhibit E, part 1, is a detailed account of the Report to the Negotiators, and exhibit E, part 2, is a list of operational components rejected from further consideration in the report. Exhibit E, part 3, is a detailed description of computer simulations used in the report to evaluate impacts of various reservoir operations on streamflow and recreational pools.

The Report to the Negotiators included a NEPA-style analysis of five potential project alternatives. Even though a number of issues had yet to be resolved through negotiations at the time the Report to the Negotiators was completed, one alternative represented some essential components of TROA. Four additional alternatives addressed each of the predominant issues identified during the public scoping process: streamflow, recreational pools, threatened and endangered species, and storage of California water. Potential impacts to water supply in the study area were given special attention, and an extensive hydrologic modeling effort was completed to characterize possible differences among the alternatives.

In reviewing the alternatives identified in the Report to the Negotiators, the negotiators recognized a number of important issues. Foremost among those was that water rights, frequently those of M&I water supplies, would be compromised to varying degrees by each of the four additional alternatives. To achieve the identified objectives, these alternatives would have required water to be stored and released without permission of the owners, precluded certain storage and release for decreed water rights and uses, and provided benefits to non-water-righted uses at the expense of water-righted uses. Such actions were in conflict with section 205(a)(2) of P.L. 101-618, which states that water is to be stored and released from Truckee River reservoirs to satisfy the exercise of water

rights in conformance with both the *Orr Ditch* and the *Truckee River General Electric* decrees. One or more of the negotiators with mandatory signature authority rejected these alternatives because of their potential adverse impact to water rights. The Basic TROA Alternative had the least adverse impact on water rights, but it, too, created conditions that were unacceptable to negotiators and, in some cases, did not comply with existing law. Accordingly, the alternatives evaluated in the Report to the Negotiators were rejected, and the negotiations continued.

## **A. Basic TROA Alternative**

This alternative emphasized implementing PSA, i.e., providing drought relief for Truckee Meadows and enhancing spawning flows for Pyramid Lake fishes. As part of this alternative, the portion of California's surface water allocation not needed to satisfy projected future water rights would remain in the Truckee River to serve downstream water rights. Existing mandatory minimum streamflows would remain in place, and Credit Water stored pursuant to PSA could be exchanged to increase the potential for maintaining streamflows. Preferred streamflows were identified as being desirable but not mandatory for fish resources. In addition, storage and releases of Credit Water could be exchanged among reservoirs to achieve non-mandatory recreational pool storage targets.

This alternative would have increased the average storage in Lake Tahoe and in Prosser Creek, Stampede, and Boca Reservoirs as compared to No Action, and improved flow conditions for cui-ui spawning. However, water supplies for M&I use in Truckee Meadows and agricultural use in Truckee Meadows and the Carson Division of the Newlands Project would be less than under No Action. Streamflows for spring spawning fish would benefit at the expenses of fall spawning fish.

## **B. Streamflow Alternative**

This alternative responded to issues raised during scoping regarding general well-being of fish and wildlife, stream-based recreation, and water quality in the Truckee River. It identified higher mandatory minimum flows, preferred streamflows, and enhanced spawning flows for cui-ui. The reservoirs would be operated to provide those mandatory streamflows by releasing all categories of water (Floriston Rate Water, Credit Water, and Private Water whenever needed and available). No storage credit would be provided to compensate for these releases. California's excess surface water—the portion of California's 10,000-acre-foot allocation not used to satisfy existing water rights—would be stored as Secondary Stored Water<sup>42</sup> and released to help maintain mandatory flows. This alternative tended to release water when it could not be used to serve water rights.

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<sup>42</sup> Secondary Stored Water is an earlier name for Other Credit Water.

In comparison to No Action, this alternative would increase flows in the Truckee River, particularly during the summer when flows are the lowest, thereby benefiting spring spawning fish, riparian vegetation, and water quality. These benefits would be realized, however, at the expense of reservoir storage, which would reduce recreational opportunities and the amount of water available for M&I and agricultural uses. Fall spawning fish would also be adversely impacted.

### **C. Recreational Pools Alternative**

This alternative responded to the issue of lake and reservoir-based recreation. It created mandatory storage targets for all reservoirs from May through August, with the intent of enhancing recreational opportunities. To achieve mandatory reservoir storage targets, releases were prohibited any time storage was less than or equal to the established target. This alternative did not optimize the use of storage to serve water rights.

This alternative would increase opportunities for recreational activities in Prosser Creek, Stampede, and Boca Reservoirs. Populations of fall and spring spawning fish in some tributaries would benefit by more frequent achievement of minimum and preferred flows. LCT in Independence Lake and cui-ui would have less favorable conditions than under No Action. Water supplies, however, would be less than under No Action for M&I use in Truckee Meadows and for agriculture in Truckee Meadows and the Newlands Project.

### **D. Threatened and Endangered Species Alternative**

This alternative responded to the issue of Pyramid Lake fishes. It established mandatory minimum streamflow requirements that were greater than existing minimum streamflow requirements to provide higher flows in the lower Truckee River during the spawning season. To achieve the flow targets, categories of water could be released and exchanged irrespective of whether they could be re-stored or protected from depletion. This alternative tended to release storage necessary to serve water rights in a drought.

This alternative would substantially increase flows for cui-ui and LCT in the lower Truckee River as compared those under the other alternatives. This increase would also benefit water quality, but would be adverse to fall spawning fish. Water supplies availability, however, would be less than under No Action for M&I use in Truckee Meadows and for agriculture in Truckee Meadows and the Newlands Project. There would be little impact to recreation.

### **E. California Assured Storage Alternative**

This alternative was California's preliminary proposal to maintain 50,000 acre-feet of carryover storage to serve beneficial uses in California. The unused portion of the interstate allocation, assumed to be 8,800 acre-feet, could be stored each year in Prosser Creek and Stampede Reservoirs, and any storage could be carried over from year to year up to a maximum of 50,000 acre-feet.

Storage of California water would be greater under this alternative than under No Action. Riparian habitat would also improve. Spring spawning fish would benefit by more frequent achievement of preferred and minimum flows, while opposite flow conditions would occur for fall spawning fish. Water supplies availability, however, would be less than under No Action for M&I use in Truckee Meadows and agriculture in the Truckee Meadows and Newlands Project. There would be little impact to recreation.

## **VI. Identification of the Preferred Alternative (NEPA) and Environmentally Superior Alternative (CEQA)**

Council of Environmental Quality regulations (40 CFR 1502.14(e)) require identifying a preferred alternative in the draft EIS, if such a preference is known. In this instance, TROA is the preferred alternative because it is the result of a multi-party negotiation process and the five mandatory signatories have expressed their preference for and willingness to abide by the conditions in the Negotiated Agreement.

Section 15126.6 of the CEQA Guidelines requires an EIR to describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. In cases where the environmentally superior alternative is the “no project” alternative, Section 15126.6(e) further requires the EIR to identify an environmentally superior alternative. Although not required to be identified in this EIR, TROA is the environmentally superior alternative, because it contains procedures designed to make more efficient use of existing Truckee River reservoirs and to provide multiple benefits, such as enhanced conditions for endangered cui-ui and threatened Lahontan cutthroat trout; reduced streamflow variability; enhanced season streamflows and water quality; and maintenance of reservoir storage to better serve recreational uses.

## **VII. Summary of Effects**

Table 2.10 presents a qualitative summary of effects of the alternatives on the resources of the study area. The table presents relative differences between the action alternatives and No Action, and between all the alternatives and current conditions. Current conditions data for some indicators, including population, employment, and income, are presented in the table to provide a specific basis of comparison with the alternatives. Current conditions are described in chapter 3, under “Affected Environment,” for each resource. No significant adverse effects are expected to occur under TROA.

**Table 2.10—Summary of effects of alternatives on resources**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Surface Water: End-of-month reservoir storage and average monthly releases (acre-feet, unless noted)</b>				
Total storage	Wet: 946,300	Slightly less than under current conditions	Similar to No Action	Much greater than under No Action or current conditions
	Median: 790,000			
	Dry: 64,000			
Lake Tahoe	Wet: 672,900	Slightly less storage and similar releases as under current conditions	Similar storage and releases as under No Action	Similar storage and much greater May-June releases and less August-January releases than under No Action or current conditions
	Median: 557,100			
	Dry: 52,600			
Donner Lake	Wet: 6,500	Similar storage and releases as under current conditions	Similar storage and releases as under No Action	Similar storage, except slightly less storage in July and August than under No Action or current conditions; slightly greater June-August releases, less September releases, and greater October releases than under No Action or current conditions
	Median: 5,800			
	Dry: 5,100			
Prosser Creek Reservoir	Wet: 18,800	Wet: similar storage and releases as under current conditions	Similar to No Action in all three hydrologic conditions	Wet: similar storage and releases as under No Action or current conditions
	Median: 14,400	Median: greater August -September storage; less May-July releases; much greater October releases than under current conditions		Median: greater May-September storage; less May-July releases and much greater September-October releases than under No Action or current conditions
	Dry: 3,100	Dry: much greater January-December storage; less May-July releases; greater October releases than under current conditions		Dry: much greater January-December storage; less May releases; greater August-October releases than under No Action or current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Surface Water: End-of-month reservoir storage and average monthly releases (acre-feet, unless noted) – continued</b>				
Independence Lake	Wet: 15,700	Similar storage and releases as under current conditions	Similar storage and releases as under No Action	Wet: similar storage and releases as under No Action or current conditions, except less releases in September
	Median: 15,600			Median: similar storage and releases as under No Action or current conditions, except greater February and August releases and less March and September releases
	Dry: 15,000			Dry: in general, slightly less January-December storage; slightly greater June-September releases; similar October-May releases as under No Action or current conditions
Stampede Reservoir	Wet: 212,900	Wet: slightly greater August-September storage and similar releases as under current conditions	Similar storage and releases as under No Action	Wet: greater May-September storage and greater September-November releases than under No Action or current conditions
	Median: 181,200	Median: similar January-December storage and lower August-September releases than under current conditions		Median: much greater January-December storage; less November-July releases and much greater September-October releases than under No Action or current conditions
	Dry: 22,000	Dry: similar January-December storage and greater March and July releases than under current conditions		Dry: much greater January-December storage and releases than under No Action or current conditions



**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
Surface Water: End-of-month reservoir storage and average monthly releases (acre-feet, unless noted) – continued				
Boca Reservoir	Wet: 34,500	Similar storage and releases as under current conditions	Similar storage and releases as under No Action	Wet: less August and greater October-December storage than under No Action or current conditions
	Median: 20,300			Median: greater August-March storage than under No Action or current conditions
	Dry: 3,400			Dry: greater January-December storage than under No Action or current conditions
Lahontan Reservoir	Wet: 277,300	Wet: slightly greater September-February storage; similar releases as under current conditions	Similar to No Action	Similar to No Action
	Median: 160,500	Median and dry: less January-December storage; less April-September releases than under current conditions		
	Dry: 99,100			

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
Surface Water: Truckee River average monthly flows (cfs)				
Farad	Wet: 1,420	Slightly less than under current conditions	Similar to No Action	Wet: greater December-June flows than under No Action or current conditions and less August-September flows than under No Action or current conditions
	Median: 650			Median: less November-February flows than under No Action or current conditions and less July-September flows than under No Action or current conditions
	Dry: 430			In general, in dry to very dry hydrologic condition: greater July-September flows than under No Action or current conditions and less November-June flows than under No Action or current conditions
Vista	Wet: 1,460	Generally slightly less than under current conditions	Similar to No Action	Wet: slightly greater December-June flows than under No Action or current conditions
	Median: 640			Median: less November-February flows than under No Action or current conditions
	Dry: 400			Dry: greater July-October flows than under No Action or current conditions
Surface Water: Effects on Pyramid Lake				
Pyramid Lake	Ending elevation: 49 feet higher by the end of 100-year period of analysis Ending storage: 28,430,000 acre-feet Average inflow: 496,720 acre-feet per year	Ending elevation, storage, and inflow less than under current conditions	Ending elevation, storage, and inflow less than under No Action or current conditions	Ending elevation, storage, and inflow greater than under No Action or current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
Surface Water: Effects on Pyramid Lake – continued				
Nixon (Pyramid Lake inflow)	Wet: 1,410 cfs	Wet: Generally slightly less flows than under current conditions	Similar to No Action	Wet: slightly greater December-June flows than under No Action or current conditions
	Median: 600 cfs	Median to dry: greater August-September flows than under current conditions		Median: less November-February flows than under No Action or current conditions and similar to slightly greater July-October flows than under No Action or current conditions
	Dry: 150 cfs			Dry: slightly greater August-October flows than under No Action or current conditions
Surface Water: Effects on Exercise of Water Rights to Meet Demand – Agricultural				
Truckee Meadows	Demand of 40,770 acre-feet per year and 21.3 percent of demand met in minimum supply year	Much less demand and a greater percent of demand met in minimum supply year than under current conditions	Same demand as under No Action and a greater percent of demand met in minimum supply year than under current conditions	Much less demand than under No Action or current conditions and greater percent of demand met in minimum supply year than under No Action or current conditions
Newlands Project Truckee Division	Demand of 18,520 acre-feet per year and 51.5 percent of demand met in minimum supply year	No demand; water rights acquired by TMWA and Fernley	Same as under No Action	Same as under No Action, i.e., no demand; water rights acquired by TMWA and Fernley
Newlands Project Carson Division	Demand of 275,720 acre-feet per year and 47.2 percent of demand met in minimum supply year	Slightly less demand and less percent of demand met in minimum supply year than under current conditions	Same demand and slightly less percent of demand met in minimum supply year than under No Action; slightly less demand and less percent of demand met in minimum supply year than under current conditions	Same demand and similar percent of demand met in the minimum supply year as under No Action; slightly less demand and less percent of demand met in minimum supply year than under current conditions
Lower Truckee River	Demand of 12,040 acre-feet per year and 100 percent of demand met in minimum supply year	Much greater demand and same percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., much greater demand and same percent of demand met in minimum supply year as under current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Surface Water: Effects on Exercise of Water Rights to Meet Demand – M&amp;I</b>				
Lake Tahoe California	Demand of 18,700 acre-feet per year and 100 percent of demand met in minimum supply year	Much greater demand and same percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., much greater demand and same percent of demand met in minimum supply year as under current conditions
Lake Tahoe Nevada	Demand of 11,000 acre-feet year and 100 percent of demand met in minimum supply year	Same demand and same percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., same demand and same percent of demand met in minimum supply year as under current conditions
Truckee River California	Demand of 8,570 acre-feet per year and 100 percent of demand met in minimum supply year	Much greater demand and same percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., much greater demand and same percent of demand met in minimum supply year as under current conditions
Truckee Meadows	Demand of 83,140 acre-feet per year and 100 percent of demand met in minimum supply year	Supply insufficient to meet demand of 119,000 acre-feet in all drought years	Supply insufficient to meet demand of 119,000 acre-feet in all drought years	Supply sufficient to meet demand of 119,000 acre-feet in all drought years
Fernley	Demand of 3,280 acre-feet per year and 100 percent of demand met in minimum supply year by groundwater	Much greater demand and less percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., much greater demand and less percent of demand met in minimum supply year as under current conditions
Lower Truckee River	Demand of 1,120 acre-feet per year and 100 percent of demand met in minimum supply year	Much greater demand and same percent of demand met in minimum supply year as under current conditions	Same as under No Action	Same as under No Action, i.e., much greater demand and same percent of demand met in minimum supply year as under current conditions
<b>Groundwater</b>				
Recharge of aquifer adjacent to Truckee River in the Oxbow reach	Not quantified	Slightly less than under current conditions	Same as under No Action	Slightly more than under No Action; same as under current conditions
Recharge of the shallow aquifer in Truckee Meadows	Not quantified	Slightly less than under current conditions	Same as under No Action	Less than under No Action; much less than under current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Groundwater – continued</b>				
Recharge of shallow aquifer near Truckee Canal due to seepage losses	Not quantified	Much less than under current conditions	Slightly less than under No Action; much less than under current conditions	Slightly more than under No Action; much less than under current conditions
Groundwater pumping in Truckee River basin in California (acre-feet per year)	7,750	19,600	18,400	Less than under No Action; much more than under current conditions
Groundwater pumping in Truckee Meadows	15,350 acre-feet (average annual modeled pumping)	Less than under current conditions	Slightly more than under No Action; less than current conditions	Less than under No Action; less than under current conditions
<b>Water Quality</b>				
Truckee River flows upstream of TTSA, downstream from Reno, and into Pyramid Lake	Greater flows in wet and median hydrologic conditions and comparatively low flows in dry hydrologic conditions	Slightly greater flows than under current conditions in dry hydrologic conditions	Same as under No Action	Slightly greater flows than under No Action or current conditions in dry hydrologic conditions
Number of days temperature standards exceeded downstream from Reno (in representative dry years)	85	120	119	87
Number of days dissolved oxygen standards exceeded downstream from Reno (in representative dry years)	109	42	39	3
Total dissolved solids, total nitrogen, and total phosphorus loadings to Pyramid Lake	Large loadings in representative wet and average years, and comparably minimal loadings in representative dry year because of lower flows	Similar to current conditions, except slightly less in representative dry years	Same as under No Action	Overall, similar to No Action and current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Sedimentation and Erosion</b>				
<i>Shoreline erosion at Lake Tahoe</i>				
	Minimal	No manmade induced degradation of any water quality parameters	Same as under No Action	Same as under No Action
<i>Stream channel erosion and sediment transport capacity</i>				
Truckee River from Donner Creek to the Little Truckee River	No overall effect	No overall effect	Same as under No Action	No significant effect
Little Truckee River from Stampede Dam to Boca Reservoir	No overall effect	No overall effect	No overall effect	No overall effect
Spice	No overall effect	Potential significant effect	Same as under No Action	No overall effect
Lockwood	No overall effect	No significant effect	Same as under No Action	No significant effect
Nixon	No overall effect	No significant effect	Same as under No Action	No significant effect
<i>Truckee River delta dynamics at Pyramid Lake</i>				
	No effect	Potential adverse effect on connectivity between the Truckee River and Pyramid Lake	Same as under No Action	Improved connectivity between Truckee River and Pyramid Lake for fish migration and spawning
<b>Biological Resources</b>				
Fish in rivers and tributaries	Preferred flows for brown and rainbow trout sustained less frequently in many reaches	Better conditions for fish in a few reaches; significant adverse effects in some reaches compared to current conditions	Same as under No Action	Significant beneficial effects in many reaches compared to No Action and current conditions
Fish in lakes and reservoirs	Reservoir storage frequently falls below thresholds recommended to minimize algal blooms	Significant beneficial effect on fish in Prosser Creek Reservoir compared to current conditions	Same as under No Action	Significant beneficial effects on fish in Prosser Creek, Stampede, and Boca Reservoirs compared to No Action and current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Biological Resources – continued</b>				
Waterfowl and shorebirds	Available foraging habitat varies by reservoir and hydrologic condition	Same as under current conditions	Same as under No Action	Significant beneficial effect at Stampede Reservoir compared to No Action and current conditions
Riparian habitat and associated species	Amount of riparian habitat varies by reach and habitat type. Ability to manage flows for riparian establishment and maintenance is limited, especially in dry and extremely dry hydrologic conditions	Wet and median hydrologic conditions: significant beneficial effects in a few reaches compared to current conditions Dry and extremely dry hydrologic conditions: significant beneficial effects in most reaches compared to current conditions	Same as under No Action	Median hydrologic conditions: significant beneficial effects in a few reaches compared to No Action and current conditions Dry and extremely dry hydrologic conditions: significant beneficial effects in all reaches compared to No Action and current conditions
Endangered, threatened, and other special status species	Cui-ui currently recovering; LCT not established in mainstem Truckee River	Cui-ui and LCT: significant adverse effects compared to current conditions	Cui-ui and LCT: Same as under No Action	Cui-ui and LCT: significant beneficial effects compared to No Action and current conditions
	Bald eagles nest at Lake Tahoe, Independence Lake, and Boca, Stampede, and Lahontan Reservoirs	Bald eagle at Stampede Reservoir: significant beneficial effects compared to current conditions	Bald eagle at Stampede Reservoir: significant adverse effects compared to No Action	Bald eagle at Stampede and Boca Reservoirs: significant beneficial effects compared to No Action and current conditions
	Tahoe yellow cress populations fluctuate based on Lake Tahoe levels	Tahoe yellow cress: same as under current conditions	Tahoe yellow cress: same as under No Action	Tahoe yellow cress: same as under No Action
	American white pelican: dependent on cui-ui for food source	American white pelican: significant adverse effects compared to current conditions	American white pelican: same as under No Action	American white pelican: significant beneficial effects compared to No Action and current conditions
	Other special status species: see riparian habitat and associated species	Other special status species: see riparian habitat and associated species	Other special status species: see riparian habitat and associated species	Other special status species: see riparian habitat and associated species

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Recreation</b>				
Seasonal recreation visitation	Recreational visitation varies among hydrologic conditions at all reservoirs, with greatest losses in visitation occurring in dry hydrologic conditions. Visitation losses occur in median hydrologic conditions, but losses are not as great as in dry hydrologic conditions.	Same as under current conditions, except slightly less at Donner Lake in median hydrologic conditions	Same as under No Action, except slightly more at Donner Lake in median hydrologic conditions	Same as under No Action, except more at Donner Lake and Prosser Creek, Stampede, and Boca Reservoirs in some hydrologic conditions
Boat ramp usability	Boat ramps are unusable from 0 to 100 percent of the recreation season, depending on lake or reservoir and hydrologic condition. Boat ramps are unusable the greatest number of months in dry hydrologic conditions at Prosser Creek Reservoir; ramps are usable the greatest number of months at Stampede Reservoir in wet and median hydrologic conditions.	Same as under current conditions, except slightly more usable at Boca Reservoir in wet hydrologic conditions	Same as under No Action	Same as under No Action and current conditions, except slightly more or less usable at Donner Lake and Boca Reservoir in certain hydrologic conditions
Suitability of flows for fly fishing	Flows are suitable 71 to 0 percent of the recreation season, depending on location and hydrologic condition. The Lake Tahoe release section of the river offers the greatest number of months of suitable flows.	Same as under current conditions, with a few exceptions	Same as under No Action	Same as under No Action



**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Recreation – continued</b>				
Suitability of flows for spin/lure/bait fishing	Flows are suitable 86 to 0 percent of the recreation season, depending on location and hydrologic condition. The Lake Tahoe release section of the river offers the greatest number of months of suitable flows.	Desired flows would occur more often in the Little Truckee River from Independence Creek to Stampede Reservoir and in the Trophy reach in wet hydrologic conditions and less often in the Mayberry, Oxbow, and Spice reaches in dry hydrologic conditions than under current conditions	Same as under No Action, except desired flows would occur more often in the Mayberry, Oxbow, and Spice reaches in median hydrologic conditions	Desired flows would occur more often in Prosser Creek in median hydrologic conditions and in the Mayberry, Oxbow, and Spice reaches in wet hydrologic conditions and less often in several reaches, primarily in wet hydrologic conditions, than under No Action and current conditions
Suitability of flows for rafting	Flows are suitable 43 to 0 percent of the recreation season, depending on location and hydrologic condition. The Trophy section of the river offers the greatest number of months of suitable flows.	Same as under current conditions	Same as under No Action	Same as under No Action, except that desired flows would occur less often in the Truckee River from Lake Tahoe to Donner Creek in wet hydrologic conditions and more often in the Mayberry, Oxbow, and Spice reaches in wet hydrologic conditions
Suitability of flows for kayaking	Flows are suitable 86 to 0 percent of the recreation season, depending on location and hydrologic condition. The Lake Tahoe release section of the river offers the greatest number of months of suitable flows.	Same as under current conditions	Same as under No Action	Same as under No Action, except that desired flows would occur less often in the Truckee River from Lake Tahoe to Donner Creek in wet hydrologic conditions and more often in the Mayberry, Oxbow, and Spice reaches in wet hydrologic conditions
<b>Economic Environment</b>				
Recreation-based employment and income	Baseline (California) Employment: 23,814 jobs Income: \$576 million	About the same employment and income as under current conditions (differences of less than 1 percent)	Same as under No Action and about the same as under current conditions (differences of less than 1 percent)	Same as under No Action and about the same as under current conditions (differences of less than 1 percent)
Employment and income affected by changes in water supply	Baseline (Nevada) Employment: 267,689 jobs Income: \$15.2 billion	About the same employment and income as under current conditions (differences of less than 1 percent)	Same as under No Action and about the same as under current conditions (differences of less than 1 percent)	Same as under No Action and about the same as under current conditions (differences of less than 1 percent)

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Economic Environment – continued</b>				
Hydroelectric power generation and revenues: run-of-the-river	Wet hydrologic conditions: 67,829 MWh; \$3.20 million	Wet hydrologic conditions: same as under current conditions	Wet hydrologic conditions: same as under No Action and current conditions	Wet hydrologic conditions: .4 percent less than under No Action; .5 percent less than under current conditions
	Median hydrologic conditions: 65,910 MWh; \$3.11 million	Median hydrologic conditions: same as under current conditions	Median hydrologic conditions: approximately the same as under No Action and current conditions	Median hydrologic conditions: 3.1 percent less than under No Action; 3.1 percent less than under current conditions
	Dry hydrologic conditions: 45,985 MWh; \$2.17 million	Dry hydrologic conditions: 1.8 percent greater than under current conditions	Dry hydrologic conditions: about the same as under No Action; 1.5 percent greater than under current conditions	Dry hydrologic conditions: 2.8 percent greater than under No Action; 4.6 percent greater than under current conditions
Hydroelectric power generation and revenues: Lahontan Dam	Wet hydrologic conditions: 26,837 MWh; \$1.27 million	Wet hydrologic conditions: about 3 percent less than under current conditions	Wet hydrologic conditions: about the same as under No Action; about 3 percent less than under current conditions	Wet hydrologic conditions: same as under No Action; about 3 percent less than under current conditions
	Median hydrologic conditions: 22,866 MWh; \$1.08 million	Median hydrologic conditions: about 3 percent less than under current conditions	Median hydrologic conditions: same as under No Action; about 3 percent less than under current conditions	Median hydrologic conditions: same as under No Action; about 3 percent less than under current conditions
	Dry hydrologic conditions: 21,520 MWh \$1.02 million	Dry hydrologic conditions: about 3 percent less than under current conditions	Dry hydrologic conditions: same as under No Action; about 3 percent less than under current conditions	Dry hydrologic conditions: same as under No Action; about 3 percent less than under current conditions
Total annual groundwater development costs	\$1,520,395	\$3,348,102 or 120 percent greater than under current conditions	40 percent greater than under No Action; \$4,696,483 or 200 percent greater than under current conditions	36 percent less than under No Action; \$2,151,982 or 42 percent greater than under current conditions

**Table 2.10—Summary of effects of alternatives on resources – continued**

Indicator/location	Current conditions	No Action	LWSA	TROA
<b>Social Environment</b>				
Population of Truckee Meadows	284,147	440,874	440,874	440,874
Urbanization of Truckee Meadows	M&I water supply of 83,140 acre-feet Baseline employment: 267,689 jobs Baseline income \$15.2 billion	Change in M&I water supply to meet additional 36,000 acre-foot demand (total 119,000 acre-foot demand) would support 74,400 full- and part-time jobs and \$2.56 billion in personal income	Same as under No Action	About the same as under No Action (differences in employment and income of less than 1 percent from baseline)
Air Quality	Regulatory programs and monitoring in place to comply with air quality criteria standards	Same as under current conditions	Same as under No Action	Same as under No Action
<b>Cultural Resources</b>				
In Area of Potential Effect, number of recorded cultural resources at lakes and reservoirs and as [percent] of total recorded resources affected	100 [38]	99 [38]	99 [38]	88 [33]
In Area of Potential Effect, number of recorded cultural resources along river and stream reaches and as [percent] of total recorded resources affected	18 [11]	9 [6]	9 [6]	18 [11]

## Chapter 2 Attachment

Exhibit A – Highlights of Changes to the October 23 Draft Agreement that Resulted in the Proposed Negotiated Agreement

Exhibit B – Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement

Exhibit C – Relation of Provisions of the Tahoe-Prosser Exchange Agreement to the Proposed Negotiated Agreement

Exhibit D – Sample – California Guidelines for Truckee River Reservoir Operations

*Part 1* – Specific Goals and Objectives for Truckee River Reservoir Operations – Sample Year - 2002

*Part 2* – General Goals and Objectives for Truckee River Reservoir Operations

Exhibit E – Selected Elements of the Report to the Negotiators

*Part 1* – Alternatives Considered and Rejected

*Part 2* – TROA Components Considered and Rejected During Negotiations

*Part 3* – Computer Analysis of Streamflow and Recreational Pool Elements Considered for TROA

## **Exhibit A**

Highlights of Changes to the  
October 2003 Draft Agreement that Resulted in  
the Proposed Negotiated Agreement

**Exhibit A: Highlights of Changes to the October 2003 Draft Agreement that Resulted in the Proposed Negotiated Agreement**

Section	Proposed Negotiated Agreement
Throughout document	Where appropriate, the name “Power Company” was replaced with the name “Water Authority”
Definitions	Deleted the reference to a map
Preface	Deleted
Recitals	Added the name of Truckee Donner Public Utility District
Recitals	Deleted the name Donner Lake Water Company
Recitals	Added statement about the Secretary’s responsibilities under TROA as they relate to the case of <i>Pyramid Lake Paiute Tribe of Indians v. Morton</i> , 354 F. Supp. 252 (D.D.C. 1973)
1.A.2	Finalized the environmental impact avoidance section
1.C.5	Added a new section that addresses the rights and obligations of Water Authority and TCID for the operation of Donner Lake and their privately owned stored water in the lake
1.E.4	Changed the section to only address by which time Reno, Sparks, and Washoe Co. would provide 6,700 acre-feet of water for water quality purposes as required by a separate agreement between these parties and the Pyramid Tribe
2.B.5(c)	Slightly modified California’s jurisdiction statement as to the <i>Orr Ditch Decree</i>
2.C.2(a)	Amended United State’s share of administrative expenses
2.C.2(b)	Amended California’s share of administrative expenses
4.F.1(d)	Modified section so that it was not necessary to list the specific water systems
5.A.1(a)	Deleted the first version of 5.A.1(a) in the 2003 Draft Agreement about prior agreements
5.B.4(a)	Clarified that the section applies to the successor in interest to the Donner Lake Water Company
5.C.3	Added provision that spilled Newlands Project Credit Water may be diverted to the Newlands Project pursuant to OCAP
5.D.1	Added provision that evaporation of Newlands Project Credit Water would be compensated by conversion of Fish Water and Fish Credit Water
5.E.2	Modified this section to address conveyance losses of Newlands Project Credit Water
6.C.1(h)	Modified the text to clarify that all management and use of water charged to California’s allocation for the generation of hydroelectric power shall be incidental to all other uses
6.C.2(b)(2)	Modified the text to clarify the applicability of conditions on water rights
6.C.4(b)	Clarified conditions on permits or licenses (including amendments) authorized after May 1, 1996, for the diversion of surface water to underground storage

**Exhibit A: Highlights of Changes to the October 2003 Draft Agreement that Resulted in the Proposed Negotiated Agreement – continued**

Section	Proposed Negotiated Agreement
6.C.5(a)(2)(i)	Clarified that the section applies to the successor in interest to the Donner Lake Water Company
6.C.5(b)(1)	Clarified conditions or actions that the California State Water Resources Control Board will require of permits or licenses, or of permittee or licensee.
Article Seven	Deleted three notes from the beginning of the article
7.A.4(b)(5)	Deleted the section because it was no longer necessary after changes to Section 7.F
7.A.4(d)	Deleted the section because it was no longer necessary after changes to Section 7.H
7.A.5(a)	Added Fernley Municipal Credit Water to the list of affected Credit Waters
7.A.6(a)	Clarified that compensation would be based on the terms and conditions of the storage contract between Water Authority and United States on a given date – the five specific conditions of this section were deleted
7.A.8	Added a new provision that addresses the disposition of water stored under Interim Storage Contract once TROA goes into effect
7.B.4(b)	Clarified the “non-firm credit multiplier” as the “Non-Firm M&I Credit Water multiplier”
7.F	Conditioned the use of Fernley Municipal Credit Water on compliance with applicable laws and acquisition of necessary approvals, and clarified the reservation of rights to assert claims
7.H	Rewrote the entire section to address establishment of Newlands Project Credit Water under the provisions of OCAP
Appendix 7.D	Added an appendix to address establishment of Newlands Project Credit Water in the event that the credit water provisions of OCAP are repealed or significantly modified
10.B.1	Added a list of wells that are “conclusively presumed” to comply with the Settlement Act
12.A.3(d)	Deleted the last clause of the section about mitigation so that it only states that California has complied with California Endangered Species Act
12.A.3(g)	Listed the case, <i>Pyramid Lake Paiute Tribe v. Lujan</i> , Civ. S-87-1281-LKK, United States District Court, Eastern District of California, as being resolved
12.A.3(h)	Added a section that states that the provision of Section 1.E.4 has been satisfied
12.A.4(g)	Moved reference to the case, <i>Pyramid Lake Paiute Tribe v. Lujan</i> , Civ. S-87-1281-LKK, United States District Court, Eastern District of California, to Section 12.A.3(g)
14.B and 14.B.1	Changed the title to Audit Clause Required in Agreements with the State of California, and modified the section accordingly

## **Exhibit B**

### Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement



**Exhibit B: Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement**

*This table is intended for informational purposes only—as an aid for finding parallel references between the Truckee River Agreement and proposed Negotiated Agreement—and is not intended to be for any substantive purposes.*

<b>Truckee River Agreement</b>	<b>Proposed Negotiated Agreement</b>
<b>Article I. Definitions</b>	
(A) Diverted Flow	Term not defined, but referred to in Section 5.A.7
(B) Floriston Rates	Definition (40)
(C) Iceland Gage	Definition (33) - Now Farad Gage
(D) Municipal and Domestic Uses	Definition (52)
(E) Natural Flow	Term not used
(F) 1915 Decree	Definition (92) - <i>Truckee River General Electric</i> decree
(G) Operative Date of this Agreement	Not included
(H) Person	Definition (62)
(I) Pondage	Definition (99) - Now Water Authority Boca Storage
(J) Privately Owned Stored Water	Definition (64)
(K) Reduced Floriston Rates	Definition (73)
(L) Supplemental Reservoir	Boca Reservoir
(M)(1) Supplemental Storage Water	Definition (9) - Now Boca Storage Water
(M)(2) Additional Supplemental Storage Water	Definition (3) - Now Additional Boca Storage Water
(N) Truckee Canal Water	Term not used
(O) Truckee River Final Decree	Definition (58) - <i>Orr Ditch</i> decree
(P) Year	Definition (e)
<b>Article II. Construction, operation and ownership of Pondage and Supplemental Reservoir</b>	
(A) Construction of Pondage	Not included
(B) Construction of Supplemental Reservoir	Not included
(C) Operation, Ownership and Maintenance of Pondage and Supplemental Reservoir	
(1) Operation of Pondage and Supplemental Reservoir	Section 5.A.5(b)
(2) Ownership of Pondage and Supplemental Reservoir	Not included
(D) Construction of Regulating Reservoirs	Not included

**Exhibit B: Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement – continued**

<p><i>This table is intended for informational purposes only—as an aid for finding parallel references between the Truckee River Agreement and proposed Negotiated Agreement—and is not intended to be for any substantive purposes.</i></p>	
Truckee River Agreement	Proposed Negotiated Agreement
<b>Article III. Rates of flow in Truckee River</b>	
(A) Maintenance of Floriston Rates and Reduced Floriston Rates	
(1) All water in Lake Tahoe to be Released for Floriston Rates	Section 5.B.3
(2) Floriston Rate Water not to be Released above Floriston Rates	Section 5.A.2(a)(3)
(3) Temporary reduction in Floriston Rates	Section 5.A.3(b)
(4) Exchange of Privately Owned Stored Water for Floriston Rate Water	Section 5.A.2(b)
(5) Floriston Rates in effect when Tahoe above 6,226.0 feet elevation	Section 5.A.2(a)
(B) Rates of Flow at Iceland Gage when Lake Tahoe is below 6226.0 feet	
(1) Conditions when Reduced Floriston Rates are in effect	Section 5.A.2(a)(2)
(2) Deviation from Reduced Floriston Rates for Power Company	Section 5.A.2(c)
(3) Reductions in Floriston Rates	Section 5.A
(4) Releases of Floriston Rate Water for Power Company	Section 5.A.2(c)
(C) Release of water from Lake Tahoe and of Supplemental Storage Water for purpose of maintaining Floriston Rates and Reduced Floriston Rates	Sections 5.A.4 and 5.A.5
(1) Use of 4,000 acre-feet by Power Company to regulate flow	Section 5.A.5(b)
(2) Releases for Floriston Rates when Tahoe above 6,225.5 feet elevation	Section 5.A.4(a)
(3) Releases for Floriston Rates when Tahoe below 6,225.5 feet elevation	Section 5.A.4(b)
(4) Use of Boca Storage Water impounded before October 1 <sup>st</sup>	Section 5.A.4(c)(1)
(5) Use of Boca Storage Water impounded after October 1 <sup>st</sup>	Section 5.A.4(c)(2)
(D) Release of 4,000 acre-feet of Truckee Canal Water for Power Company use	Section 5.A.2(c)
(E) Release of water for removal of ice	Section 5.A.3(c)

**Exhibit B: Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement – continued**

<i>This table is intended for informational purposes only—as an aid for finding parallel references between the Truckee River Agreement and proposed Negotiated Agreement—and is not intended to be for any substantive purposes.</i>	
<b>Truckee River Agreement</b>	<b>Proposed Negotiated Agreement</b>
(F) Release of water from Lake Tahoe to prevent High Water Damage	Section 5.A.3(d)
(G) Release of Additional Supplemental Reservoir	Section 5.A.4(d)
<b>Article IV.</b> Impounding Water in Supplemental Reservoir	
(A) Impounding 25,000 acre-feet of Boca Storage Water	Section 5.B.9(a)
(B) Impounding Additional Boca Storage Water up to capacity of Boca Reservoir	Section 5.B.9(b)
(C) General Conditions	
(1) Maximize Truckee Canal Water	Section 5.B.9(f)
(2) Release for TCID during first year of TRA	Not included
(3) Maximize storage in Boca	Section 5.B.9(f)
<b>Article V.</b> Diversions by Power Company from Truckee River into Highland Ditch and from Hunter Creek	
(A) 40 cfs diversion from Truckee River	Section 5.A.6
(B) Diversion into Highland Ditch to remove ice	Sections 5.A.6 and 5.A.8
(C) Diversion from Hunter Creek	Section 5.A.6
<b>Article VI.</b> 4,000 acre-feet of Truckee Canal Water for Power Company use	Section 5.B.2
<b>Article VII.</b> Allocation of Diverted Flow of Truckee River after Operative Date of this Agreement	Section 5.A.7
<b>Article VIII.</b> Limitation of Area Irrigated within the Conservation District	Not included
<b>Article IX.</b> Releases and Diversion of Privately Owned Stored Water	Section 5.E.2
<b>Article X.</b> Truckee River Final Decree	Not included
<b>Article XI.</b> Rights of the United States to use of water of Truckee River upon Pyramid Lake Indian Reservation Lands	Not included
<b>Article XII.</b> Withdrawal of protest against granting application Nos. 5169 and 6534 filed with California Division of Water Rights	Not included

**Exhibit B: Relation of Provisions of the Truckee River Agreement to the Proposed Negotiated Agreement – continued**

<i>This table is intended for informational purposes only—as an aid for finding parallel references between the Truckee River Agreement and proposed Negotiated Agreement—and is not intended to be for any substantive purposes.</i>	
<b>Truckee River Agreement</b>	<b>Proposed Negotiated Agreement</b>
<b>Article XIII.</b> Recognition of Right of Irrigation District to enlarge Truckee Canal to a capacity of 1,200 cubic feet per second and to increase capacity of Lahontan Reservoir	Not included
<b>Article XIV.</b> Excuses for non-performance and delay in performance	Not included
<b>Article XV.</b> 1915 Decree not to be affected by this Agreement	Section 12.A.4(c)
<b>Article XVI.</b> Agreement between United States and Irrigation District dated December 18, 1926, to remain in effect.	Not included
<b>Article XVII.</b> Provisions of this Agreement not to limit or affect rights of Power Company to use Waters of Lake Tahoe and/or Truckee River for generation of electric power	Section 7.A.6
<b>Article XVIII.</b> Provisions relative to the appointment of Water Administrator and to compilation of data	Not included
<b>Article XIX.</b> Method of giving notice or making request	Not included verbatim, but principle addressed in Section 14.P
<b>Article XX.</b> Provisions relative to time when and conditions under which Agreement becomes operative	Not included
<b>Article XXI.</b> Provisions of Agreement to apply to and bind heirs, administrators, successors and assigns of parties	Not included
<b>Article XXII.</b> Obligations of parties to this Agreement is several	Not included
<b>Article XXIII.</b> Privately Owned Stored Water	Section 5.A.1(d)
<b>Article XXIV.</b> Rights of Non-Signors of Agreement not to be affected hereby	Not included
<b>Article XXV.</b> Miscellaneous	
(A) – (E)	Not included
(F) Lake Tahoe Datum	Section 5.A.1(b)
(G) (1) – (2)	Not included
(3) Pumping Lake Tahoe	Section 5.B.3(b)
<b>Article XXVI.</b> Execution of Agreement in Counterparts	Not included
<b>Article XXVII.</b> Irrigation District Contract authorized by election and confirmed by Court	Not included
<b>Article XXVIII.</b> Member of Congress Clause	Section 14.C

## **Exhibit C**

Relation of Provisions of the  
Tahoe-Prosser Exchange Agreement  
to the Proposed Negotiated Agreement

**Exhibit C: Relation of Provisions of the Tahoe-Prosser Exchange Agreement to the Proposed Negotiated Agreement**

<p><i>This table is intended for informational purposes only—as an aid for finding parallel references between the Tahoe-Prosser Exchange Agreement and proposed Negotiated Agreement— and is not intended to be for any substantive purposes.</i></p>	
<b>Tahoe-Prosser Exchange Agreement</b>	<b>Proposed Negotiated Agreement</b>
1. Construction of Prosser Creek Dam and Reservoir	Not included
2. Exchange of Water	
(a) Maintaining minimum flows from Lake Tahoe	Section 5.B.6 and Section 9.C.2
(b) Release of Tahoe Exchange Water	Section 5.B.6
(c) Tahoe Exchange Water suffers no loss	Section 5.D.5
(d) Daily records	Section 3.B.
(e) Floriston Rates and Reduced Floriston Rates definition	Definitions (40) and (73), respectively
3. Truckee River Agreement not abrogated	Not included
4. Parties to seek amendment to <i>Truckee River General Electric</i> Decree	Section 12.A.4(c)
5. Non-discrimination clause	Not included
6. Contingency on appropriation of funds	Not included
7. Member of Congress clause	Section 14.C
8. Contingency on 1915 Decree modification	Section 12.A.4(c)
9. Agreement binding on successors	Not included

## **Exhibit D**

### **Sample – California Guidelines for Truckee River Reservoir Operations**

*Part 1*– Specific Goals and Objectives for  
Truckee River Reservoir Operations –  
Sample Year - 2002

*Part 2* – General Goals and Objectives for  
Truckee River Reservoir Operations

## **Exhibit D**

### **Sample – California Guidelines for Truckee River Reservoir Operations**

*Part 1*– Specific Goals and Objectives for  
Truckee River Reservoir Operations –  
Sample Year - 2002



**SAMPLE**

**CALIFORNIA GUIDELINES  
FOR TRUCKEE RIVER RESERVOIR  
OPERATIONS**

## FOREWORD

If the Truckee River Operating Agreement (TROA) is signed and becomes effective, California would annually submit Guidelines for Truckee River Reservoir Operations concerning instream flow, reservoir levels, and other environmental objectives in the California portion of the Truckee River Basin. California's TROA representative, with advice and counsel from appropriate State agencies and California Truckee River Basin local interest groups, would be responsible for preparing and submitting these Guidelines. The general content and process for submittal of the Guidelines are included in TROA Sections 9.F and 11.C.2(b), respectively. The Guidelines would be submitted to the TROA Administrator and Scheduling Parties each spring to provide the Administrator the opportunity to encourage inclusion of recommendations in the Guidelines during the subsequent TROA water operations scheduling process.

The purpose of this sample of the California Guidelines is to show what these Guidelines might look like when they are submitted to the TROA Administrator. These Guidelines do not represent a practical plan for current operations without TROA. The Department of Water Resources has prepared this sample in anticipation of TROA being signed for several reasons: (1) California local interests and potential TROA signatories have expressed interest in seeing an example of the Guidelines so they may have a better understanding of what to expect when TROA is operative; (2) during the upcoming TROA EIR/EIS process, information from this sample of the Guidelines would be used to develop criteria for scheduling use of California's Joint Program Fish Credit Water and other reservoir operations in model runs that would help analyze the environmental impacts from TROA operations; and (3) preparation and discussion of this sample of the Guidelines would help in developing an understanding among all parties of the expected type of items that would be addressed in the Guidelines and how they could be presented.

This sample of the Guidelines is based on hydrologic conditions forecasted in the March 25, 2002, United States Bureau of Reclamation, Truckee River Operation Study, which includes anticipated water demands from Nevada water right holders in the Truckee River Basin.

## INTRODUCTION

These Guidelines are transmitted to the TROA Administrator and TROA Scheduling Parties for use during the water operations scheduling process. Under varying conditions of water availability and anticipated use, there is often more than one option for operating upstream reservoirs without significant risk of adverse impacts to existing water rights. Section 9.F.2 of TROA calls for the TROA Administrator to encourage the scheduling parties to schedule in accordance with the California Guidelines and to engage in voluntary exchanges and re-storage options to the extent practicable and consistent with the exercise of water rights, assurance of water supplies, operational considerations, the Settlement Act (Public Law 101-618), and TROA. It is anticipated that, given the opportunity, the TROA Scheduling Parties will use these Guidelines to schedule their operations to help meet California's objectives for reservoir storage and instream flows below the reservoirs.

These Guidelines are divided into two parts. Part 1 is "Specific Goals and Objectives for Truckee River Reservoir Operations – 2002," consisting of operational goals and objectives based on a March forecast of 2002 hydrologic conditions and reservoir storage, anticipated water use, and reservoir operations. Part 2 is "General Goals and Objectives for Truckee River Reservoir Operations," consisting of operational goals and objectives for instream flows and reservoir storage that are general in nature and do not usually change from year to year. These general objectives have been developed and are included here to provide continuing overall guidance to the Administrator and other TROA scheduling parties and to provide a continuing framework within which the annual specific goals objectives are presented.

The TROA Scheduling Parties are encouraged to take the California Guidelines into account during the TROA scheduling process and to schedule and adjust their water operations to help meet California's goals and objectives. California may revise and resubmit these 2002 Guidelines to the TROA Administrator and Scheduling Parties in response to their comments and recommendations, changes in schedules for reservoir operations, and changes in forecasted hydrologic conditions.

## PART 1 – SPECIFIC GOALS AND OBJECTIVES FOR TRUCKEE RIVER RESERVOIR OPERATIONS – SAMPLE YEAR – 2002

### **Reservoir Storage and Instream Flow Goals and Objectives For 2002**

Specific proposals to achieve California's goals for improving instream flows and recreation pools in the Truckee River Basin have been developed based on the March 25, 2002, United States Bureau of Reclamation (USBR) forecast of Truckee River reservoir storages and releases. These proposals are shown in Table 1 and summarized below:

- Alternate releases between Prosser and Stampede, re-storing some of this water in Boca, where it can be released to meet Pyramid Lake fish needs in November and December to: (1) increase the Stampede release to or above the minimum of 45 cfs in July through October, (2) increase the Prosser release above the minimum of 16 cfs in June, and (3) generally even out releases from Stampede and Prosser toward the Preferred Instream Flows.
- Eliminate the predicted spike in releases from Independence Lake in September through consultation with TMWA, releasing water from Independence at a consistent rate over a longer period in July, August and September and re-storing the earlier release as needed to meet TMWA's long-term objectives.
- Increase the predicted below-minimum releases from Donner Lake in July and August toward the minimum of 8 cfs and reduce it an equivalent amount in September and October without allowing the lake to drop below 8,000 acre-feet before the end of August.

Table 2 shows the USBR forecast of Truckee River Basin reservoir storage and releases and corresponding storage and releases due to implementing these current year reservoir storage and instream flow objectives. The corresponding storage levels are computed based on proposed changes in releases.

California also plans to coordinate with the United States and the Pyramid Tribe as soon as practicable to further propose a TROA Section 8.S Exchange. This would increase low releases of water from Lake Tahoe in lieu of high Stampede releases during the Spring Cui-ui run with an equivalent increase in low releases from Stampede in lieu of high Lake Tahoe releases in late Summer and early Fall. If such an exchange can be implemented, California will resubmit these Guidelines to take into account this considerable change in scheduled operations.

## **Goals for Management of Joint Program Fish Credit Water, Environmental Credit Water, and Additional Environmental Credit Water**

As of April 1, 2002, prior schedules indicate that California will have established 6,000 acre-feet of Joint Program Fish Credit Water, of which 3,000 acre-feet is in Lake Tahoe and 3,000 acre-feet is in Stampede Reservoir. California's goal is to use this Credit Water to meet the Reservoir Storage and Instream Flow Goals and Objectives that are not met through proposals made to the TROA Administrator and Scheduling Parties as identified in the previous section and shown in Tables 1 and 2.

A schedule for releases of Joint Program Fish Credit Water is in Table 3. Included in this schedule is an exchange of 3,000 acre-feet of Fish Credit Water from Lake Tahoe to Stampede, as per a Memorandum of Understanding with the U.S and Pyramid Lake Tribe. On a monthly basis, the release, re-storage and exchange schedule for the period of April 2002 through December 2002 is:

April	Release 1,800 acre-feet from Lake Tahoe, accumulating all 1,800 acre-feet in Prosser via an exchange.
May	Release 2,100 acre-feet from Tahoe and 1,500 acre-feet from Stampede, accumulating only 900 acre-feet in Boca and 1,200 acre-feet in Prosser via an exchange.
June	Release 2,100 acre-feet from Tahoe and 1,800 acre-feet from Prosser and 900 acre-feet from Boca, accumulating only 3,300 acre-feet in Stampede via an exchange.
July	Release 600 acre-feet from Prosser and 300 acre-feet from Stampede, accumulating all 300 acre-feet in Independence and 600 acre-feet in Boca via an exchange.
August	Release 600 acre-feet from Prosser, accumulating all 600 acre-feet in Boca via an exchange.
September	Release 600 acre-feet from Stampede, accumulating all 300 acre-feet in Donner and 300 acre-feet in Boca via an exchange.
October	Release 600 acre-feet from Stampede and 300 acre-feet in Donner, accumulating all 900 acre-feet in Boca via an exchange
November	Release 600 acre-feet from Stampede and 300 acre-feet from Independence, accumulating all 900 acre-feet in Boca via an exchange.
December	Release 300 acre-feet from Stampede, accumulating all 300 acre-feet in Boca via an exchange.

Table 4 shows the anticipated result of these releases if scheduled along with implementation of the specific proposals for improving instream flows and recreation pools in Tables 1 and 2. We also anticipate that, after these releases and exchanges are made, 3,000 acre-feet of Fish Credit Water will remain in Stampede, 3,000 acre-feet of Joint Program Fish Credit Water will remain in Boca, and 3,000 acre-feet of Joint Program Fish Credit Water will have been released without being exchanged. meet water quality objectives for the Truckee River.

### **Consultation between California and Other TROA Parties**

As pointed out in the Introduction to these California Guidelines, they are transmitted to the TROA Administrator and Scheduling Parties so they may be used to schedule operations (to the extent practicable and consistent with the exercise of water rights, assurance of water supplies, operational considerations, the Settlement Act and TROA) to help meet California's objectives for preferred instream flows and reservoir-based recreation, to limit or eliminate releases above the maximum instream flows, and to provide ramping of flows. Any questions regarding these specific-year reservoir storage and instream flow goals and objectives, or California's management of Joint Program Fish Credit Water, Environmental Credit Water, or Additional Environmental Credit Water should be directed to California's TROA representative.

## **Exhibit D**

### **Sample – California Guidelines for Truckee River Reservoir Operations**

#### *Part 2* – General Goals and Objectives for Truckee River Reservoir Operations

## PART 2 – GENERAL GOALS AND OBJECTIVES FOR TRUCKEE RIVER RESERVOIR OPERATIONS

### **General Objectives for Instream Flows below Reservoirs**

California's general objective for instream flows below reservoirs is that, to the extent possible, they will be maintained between the "Minimum Flows" and the "Maximums Flows" for each reach as shown in Table 5. When possible, the "Preferred Flows" shown in Table 5 should be maintained in as many reaches and for as long a time as is feasible. If options to achieve preferred flows in any given year are limited and a choice is to be made among stream reaches, the desired priority, from highest to lowest, is:

- 1) Little Truckee River (Stampede Dam to Boca Reservoir);
- 2) Truckee River from Lake Tahoe to California Border;
- 3) Little Truckee River (Independence Lake Dam to Stampede Reservoir);
- 4) Prosser Creek from Prosser Creek Reservoir to the Truckee River; and
- 5) Donner Creek from Donner Lake Dam to the Truckee River.

Another instream flow objective is to avoid rapid changes in flow rates through "ramping" of reservoir releases. It is best to limit the rate of increase or decrease to the smallest steps feasible. Ramping is most important in the reaches below Lake Tahoe, Donner Lake, Prosser Creek Reservoir, and Stampede Reservoir, and it is more important to ramp releases down slowly (limit the rate of decrease) than ramp releases up slowly. California's recommendations for ramping flows are as follows:

- Increasing flows - Flows should not be increased more than 100% during a 24-hour period; the change during the 24-hour period should occur in a minimum of three, proportional amounts (i.e., one-third the total 24-hour change per 8 hours).
- Decreasing flows - Flows should not be decreased more than 50% during a 24-hour period; the change during the 24-hour period should occur in a minimum of three, proportional amounts (i.e., one-third the total 24-hour change per 8 hours).

One further instream flow objective is to prevent the Truckee River and its tributaries from freezing solid in the winter months. To prevent icing in the stream sections outlined below, the recommended minimum flows in these stream sections during the winter months is for:

- Donner Creek, Donner Lake to the Truckee River – 3 cfs.
- Prosser Creek – To be developed in accordance with TROA Section 9.C.5(d).
- Independence Creek, Independence Lake to the Little Truckee River – 4 cfs.
- Truckee River, Lake Tahoe to Donner Creek – 30 cfs.
- Truckee River, Donner Creek to the Little Truckee River – 50 cfs.



### **General Objectives for Reservoir Storage**

California's general objective for reservoir storage is that they be maintained at or above the "Preferred Minimum Storage" levels shown in Table 6, from the start of the Memorial Day weekend to the end of the Labor Day weekend of each year. This is to maintain maximum reservoir recreation-based opportunities in California reservoirs in the Truckee River Basin

For Donner Lake, every effort should be made to maintain the "Preferred Minimum Storage" of 8,000 acre-feet through the Labor Day weekend, even at the expense of drawing down other reservoirs through exchanges.

If options to achieve the preferred minimum storage in reservoirs other than Donner Lake are limited, and a choice is necessary to maximize recreation opportunities, the preferred order of operations is as follows:

1. If any reservoir drops below the "Minimum Storage" identified in Table 6, releases from that reservoir should be continued until the reservoir reaches the minimum fish pool, in lieu of releases from other reservoirs, to allow higher storages to be maintained in the other reservoirs.
2. Avoid dropping any reservoir below levels that are necessary to protect fish ("Minimum Fish Storage") specified in Table 6. If it becomes necessary to drop the reservoirs below minimum fish storage levels please consult with California's TROA representative since more specific priorities among reservoirs may have been developed after this writing.
3. Whenever storage in Stampede Reservoir is above the "Preferred Minimum Storage" specified in Table 6, it is preferable to release water from Lake Tahoe or Stampede Reservoir in lieu of releases from Boca or Prosser Creek Reservoirs to meet water demands; so that Boca and Prosser Creek Reservoirs do not drop below their "Preferred Minimum Storages" as specified in Table 6.
4. If the storage in Stampede Reservoir drops below its "Preferred Minimum Storage" specified in Table 6 and a release from Lake Tahoe is not feasible, releases should be made from Prosser Creek Reservoir and Boca Reservoir in lieu of releases from Stampede Reservoir to meet water demands.

### **Establishing Priorities among Instream Flow and Reservoir Storage Objectives**

Instream flow objectives could, at times, conflict with the reservoir storage objectives. The "Specific Goals and Objectives" in Part 1 will, under most circumstances, describe how to best make this choice given existing hydrologic conditions.

The California TROA representative will make recommendations to the TROA Administrator on instream flow needs and reservoir levels to support recreation in consultation with California interests. If there are competing or conflicting demands for instream flows or reservoir-based recreation, prior to making such recommendations, the California TROA representative will consult with potentially affected California interests to assist in determining the best course of action. During the consultation process, until a decision is made, maintenance of instream flows should be given priority. Parties that may be consulted during this examination process include the following:

- Truckee River Basin Water Group
- Placer County, Nevada County, And Sierra County
- Town of Truckee
- Tahoe-Truckee Sanitation Agency
- Local Rafting Interests
- Local Fishery Interests
- Local Water Supply Interests
- Local Recreation Interests
- State of California agencies, including the Departments of Fish and Game, Parks and Recreation, and Water Resources, and the State Water Resources Control Board and Lahontan Regional Water Quality Control Board
- Federal Agencies, including the U.S. Fish and Wildlife Service, U.S. Forest Service, and the U.S. Bureau of Reclamation
- Pyramid Lake Paiute Indian Tribe

### **Coordinating Municipal and Industrial Storage Objectives with California Guidelines**

California M&I Credit Water may be established in Lake Tahoe and other Truckee River Reservoirs as specified in TROA. If and when this occurs, the instream flow and recreation objectives in these Guidelines may be coordinated with M&I storage objectives for this water.

**Table 1 - Specific Proposals for Voluntary Operations  
to Improve Instream Flows and Recreation Pools – 2002**

<b>Problem Statement and Proposed Change to March 2002 USBR Forecast</b>			<b>Consultation</b>	<b>Proposed Action to Implement Proposed Change to Forecast</b>
Stampede releases are low in July-Oct while Prosser Releases are high; and Prosser releases are low in June and Nov when Stampede releases are high.			Check with USFWS/Tribe & Water Master.	
	Prosser Forecast/Proposed	Stampede Forecast/Proposed	If the Prosser releases are primarily Uncommitted Water that could be released at a different schedule in coordination with Stampede releases and still meet needs in Nevada.	Request USFWS/Tribe alternate releases between Prosser and Stampede as proposed, also releasing and re-storing some of this water in Boca, where it can be released to meet downstream needs in Nov and Dec.
June	12/42 cfs	227/197 cfs	If the Prosser releases are primarily Uncommitted Water that can only be released at specific times to meet needs in Nevada.	Request USFWS/Tribe alternate releases between Prosser and Stampede toward proposed flows to the extent acceptable, also releasing and re-storing some of this water in Boca, where it can be released to meet their needs in Nov and Dec.
July	91/66 cfs	29/69 cfs		
Aug	98/73 cfs	29/69 cfs		
Sept	72/87 cfs	30/45 cfs		
Oct	83/88 cfs	35/45 cfs		
Nov	22/22 cfs	115/45 cfs	If the Prosser releases are primarily T-P-Exchange Water that may be blended with Tahoe and Boca releases on a different schedule.	Request the Water Master blend T-P-Exchange Water with other Floriston Rate releases toward proposed flows to the extent acceptable. Request USFWS/Tribe and others exchange Credit Water from Stampede to Prosser to assist in otherwise meeting proposed flows to the extent their needs are still met.
Dec	30/30 cfs	57/52 cfs		
			If the Prosser releases are primarily T-P-Exchange Water that must be released as per the current release schedule.	Request USFWS/Tribe and others exchange Credit Water from Stampede to Prosser toward the proposed flows to the extent their needs are still met.

**Table 1 (continued) - Specific Proposals for Voluntary Operations  
to Improve Instream Flows and Recreation Pools – 2002**

<b>Problem Statement and Proposed Change to March 2002 USBR Forecast</b>	<b>Consultation</b>	<b>Proposed Action to Implement Proposed Change to Forecast</b>
<p>Very high release from Independence Lake in Sept (monthly average)</p> <p>Forecast/Proposed</p> <p>July 11/19 cfs</p> <p>Aug 5/13 cfs</p> <p>Sept 29/13 cfs</p> <p>Oct 8/8 cfs</p> <p>Nov 5/5 cfs</p>	Check with TMWA.	
	If the Sept release from Independence is needed as an exchange to another reservoir or to meet downstream needs in Nevada.	Request TMWA exchange 960 acre-feet more from Independence Lake at a constant rate in July-Aug to another reservoir (Stampede?) where it can still be used; reducing the release from Independence accordingly in Sept.
	If the Sept release from Independence is scheduled for some other reason.	Request TMWA exchange their water, as stated in the row above, to the extent acceptable.
<p>Donner Lake release (monthly average) is below the minimum (8 cfs) in July-Aug and above the maximum in Sept.</p> <p>Forecast/Proposed</p> <p>June 35/35 cfs</p> <p>July 3/7 cfs</p> <p>Aug 3/7 cfs</p> <p>Sept 27/23 cfs</p> <p>Oct 48/44 cfs</p> <p>Nov 33 /33 cfs</p>	Check with TMWA/TCID (and Donner Lake recreation interests).	
	If the Sept-Oct releases from Donner are needed as an exchange to another reservoir or to meet downstream needs in Nevada.	Request TMWA/TCID exchange 480 acre-feet (or some lesser amount that does not allow the lake to drop below an acceptable end-of-Aug recreation target - assumed to be 8,000 acre-feet here) more from Donner Lake at a constant rate in July-Aug to another reservoir where it can still be used, reducing the Donner release accordingly in Sept-Oct.
	If the Sept-Oct releases from Donner are scheduled for some other reason.	Request TMWA/TCID exchange their water, as stated in the row above, to the extent acceptable.

**Table 2 – USBR Forecast\* and Proposed Reservoir Storage and Instream Flows to Meet Current-year Objectives with Voluntary Changes to Operations**

	Lake Tahoe Elev (FEET)	Truckee River at Tahoe City (CFS)		Donner Lake Storage (TAF)		Donner Lake Release (CFS)		Prosser Reservoir Storage (TAF)		Prosser Reservoir Release (CFS)	
		Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed
Jan-02	6224.3	62 <	NC <	3.6	NC	27	NC	8.3	NC	42 ☹	NC ☹
Feb-02	6224.3	94 ☹	NC ☹	3.8	NC	20	NC	8.8	NC	33 ☹	NC ☹
Mar-02	6224.5	54 <	NC <	4.0	NC	35	NC	9.8	NC	56 ☹	NC ☹
Apr-02	6224.7	71 <	NC <	6.0	NC	56 ☹	NC ☹	11.9	NC	154 >	NC >
May-02	6225.2	68 <	NC <	9.5	NC	69 ☹	NC ☹	18.9	NC	126 ☹	NC ☹
Jun-02	6225.4	72 <	NC <	9.5 ☹	NC ☹	35 ☹	NC ☹	26.8 ☹	25.0 ☹	12 ☹	42 ☹
Jul-02	6225.1	261 ☹	NC ☹	9.2 ☹	8.9 ☹	3 <	7 <	23.5 ☹	23.2 ☹	91 ☹	66 ☹
Aug-02	6224.5	375 ☹	NC ☹	8.6 ☹	8.2 ☹	3 <	7 <	18.0 <	19.2 ☹	98 >	73 >
Sep-02	6224.0	236 ☹	NC ☹	6.9	6.7	27 >	23 >	14.0	14.3	72 >	87 >
Oct-02	6223.7	101 ☹	NC ☹	4.5	NC	48 ☹	44 ☹	9.8	NC	83 ☹	88 ☹
Nov-02	6223.6	52 <	NC <	3.2	NC	33 ☹	NC ☹	9.8	NC	22 <	NC <
Dec-02	6223.6	49 <	NC <	3.2	NC	16	NC	9.8	NC	30 ☹	NC ☹

KEY: > Instream fish flows that exceed maximums  
 ☹ Instream fish flows and reservoir storages that are within objective ranges  
 < Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages  
 NC No Changes Recommended

\* The 50 Percent Streamflow and Reservoir Storage Forecast is the “Most Probable” forecast and is generally considered to be the best estimate of anticipated monthly average streamflow and end of the month reservoir storage based upon the outcome of similar situations in the past. There is a 50 percent chance that actual streamflow volume and reservoir storage amounts will be less than this forecast value and a 50 percent chance that it will exceed this value.

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average

**Table 2 (Continued)– USBR Forecast\* and Proposed Reservoir Storage and Instream Flows to meet Current-year Objectives with Voluntary Changes to Operations**

	Independence Lake Storage (TAF)		Independence Creek below Independence Lake (CFS)		Stampede Reservoir Storage (TAF)		Stampede Reservoir Release (CFS)		Boca Reservoir Storage (TAF)		Boca Reservoir Release (CFS)	
	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed
<b>Jan-02</b>	15.4	NC	5 <	NC <	169.1	NC	54 ☹	NC ☹	8.0	NC	38	NC
<b>Feb-02</b>	15.7	NC	4 ☹	NC ☹	168.8	NC	65 ☹	NC ☹	8.6	NC	67	NC
<b>Mar-02</b>	16.3	NC	5 ☹	NC ☹	166.4	NC	140 ☹	NC ☹	16.4	NC	43	NC
<b>Apr-02</b>	16.4	NC	34 ☹	NC ☹	161.9	NC	346 >	NC >	33.1	NC	76	NC
<b>May-02</b>	17.2	NC	56 >	NC >	179.0	NC	112 ☹	NC ☹	40.2	NC	0	NC
<b>Jun-02</b>	17.1	NC	50 >	NC >	176.3 ☹	178.1 ☹	227 ☹	197 ☹	40.1 ☹	NC ☹	227	197
<b>Jul-02</b>	16.8	16.3	11 ☹	19 ☹	174.8 ☹	174.7 ☹	29 <	69 ☹	34.9 ☹	35.8 ☹	106	127
<b>Aug-02</b>	16.4	15.4	5 ☹	13 ☹	172.5 ☹	170.4 ☹	29 <	69 ☹	32.7 <	34.5 ☹	56	77
<b>Sep-02</b>	14.7	NC	29 >	13 ☹	172.0	168.1	30 <	45 ☹	24.5	28.1	162	151
<b>Oct-02</b>	14.4	NC	8 ☹	NC ☹	172.0	167.5	35 <	45 ☹	15.5	19.9	187	186
<b>Nov-02</b>	14.3	NC	5 <	NC <	167.2	166.9	115 ☹	45 ☹	10.5	10.8	197	NC
<b>Dec-02</b>	14.2	NC	9 ☹	NC ☹	167.2	NC	57 ☹	52 ☹	5.3 <	NC <	141	NC

KEY: > Instream fish flows that exceed maximums  
☹ Instream fish flows and reservoir storages that are within objective ranges  
< Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages  
NC No Changes Recommended

\* The 50 Percent Streamflow and Reservoir Storage Forecast is the “Most Probable” forecast and is generally considered to be the best estimate of anticipated monthly average streamflow and end of the month reservoir storage based upon the outcome of similar situations in the past. There is a 50 percent chance that actual streamflow volume and reservoir storage amounts will be less than this forecast value and a 50 percent chance that it will exceed this value.

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average

**Table 3. Proposed Average Monthly Release Schedule for JPFCW and FCW\***

	Truckee River at Tahoe City (CFS)	Donner Lake Release (CFS)	Prosser Reservoir Release (CFS)	Indep Lake Release (CFS)	Stampede Reservoir Release (CFS)	Boca Reservoir Release (CFS)	
<b>Jan-02</b>							<b>Jan-02</b>
<b>Feb-02</b>							<b>Feb-02</b>
<b>Mar-02</b>							<b>Mar-02</b>
<b>Apr-02</b>	<b>30.0</b>		<b>(30.0)</b>				<b>Apr-02</b>
<b>May-02</b>	<b>35.0</b>		<b>(20.0)</b>		<b>25.0</b>	<b>(15.0)</b>	<b>May-02</b>
<b>Jun-02</b>	<b>35.0</b>		<b>30.0</b>		<b>(55.0)</b>	<b>15</b>	<b>Jun-02</b>
<b>Jul-02</b>			<b>10.0</b>	<b>(5.0)</b>	<b>5.0</b>	<b>(10.0)</b>	<b>Jul-02</b>
<b>Aug-02</b>			<b>10.0</b>			<b>(10.0)</b>	<b>Aug-02</b>
<b>Sep-02</b>		<b>(5.0)</b>			<b>10.0</b>	<b>(5.0)</b>	<b>Sep-02</b>
<b>Oct-02</b>		<b>5.0</b>			<b>10.0</b>	<b>(15.0)</b>	<b>Oct-02</b>
<b>Nov-02</b>				<b>5.0</b>	<b>10.0</b>	<b>(15.0)</b>	<b>Nov-02</b>
<b>Dec-02</b>					<b>5.0</b>	<b>(5.0)</b>	<b>Dec-02</b>

Negative releases (in parenthesis) indicate an exchange or re-storage of water into that reservoir

\*Releases of Fish Credit Water are per Memorandum of Understanding with the U.S. and the Pyramid Lake Paiute Indian Tribe

**Table 4 - Proposed Reservoir Storage and Instream Flows to meet Current-Year Objectives with Voluntary Changes to Operations and Releases of JPFCW and FCW**

	Lake Tahoe Elev (FEET)	Truckee River at Tahoe City (CFS)	Donner Lake Storage (TAF)	Donner Lake Release (CFS)	Prosser Reservoir Storage (TAF)	Prosser Reservoir Release (CFS)	Indep. Lake Storage (TAF)	Indep. Creek Below Indep. (CFS)	Stampede Res Storage (TAF)	Stampede Res Release (CFS)	Boca Res Storage (TAF)	Boca Res Release (CFS)
<b>Jan-02</b>	6224.3	62 <	3.6	27	8.3	42 ☺	15.4	5 <	169.1	54 ☺	8.0	38
<b>Feb-02</b>	6224.3	94 ☺	3.8	20	8.8	33 ☺	15.7	4 ☺	168.8	65 ☺	8.6	67
<b>Mar-02</b>	6224.5	54 <	4.0	35	9.8	56 ☺	16.3	5 ☺	166.4	140 ☺	16.4	43
<b>Apr-02</b>	6224.7	101 ☺	6.0	56 ☺	13.7	124 ☺	16.4	34 ☺	161.9	346 >	33.1	76
<b>May-02</b>	6225.2	103 ☺	9.5	69 ☺	22.0	106 ☺	17.2	56 >	177.5	137 ☺	41.1	10
<b>Jun-02</b>	6225.3	107 ☺	9.5 ☺	35 ☺	26.2 ☺	72 ☺	17.1	50 >	179.9 ☺	142 ☺	40.1 ☺	157
<b>Jul-02</b>	6225.0	261 ☺	8.9 ☺	7 <	23.8 ☺	76 ☺	16.6	14 ☺	176.2 ☺	69 ☺	36.4 ☺	117
<b>Aug-02</b>	6224.4	375 ☺	8.2 ☺	7 <	19.2 ☺	83 >	15.7	13 ☺	171.9 ☺	69 ☺	35.8 ☺	67
<b>Sep-02</b>	6224.0	236 ☺	7.0	18 ☺	14.3	87 >	15.0	13 ☺	169.0	55 ☺	29.6	156
<b>Oct-02</b>	6223.6	101 ☺	4.5	49 ☺	9.8	88 ☺	14.7	8 ☺	167.8	55 ☺	22.3	181
<b>Nov-02</b>	6223.6	52 <	3.2	33 ☺	9.8	22 <	14.3	10 ☺	166.6	60 ☺	14.2	197
<b>Dec-02</b>	6223.6	49 <	3.2	16	9.8	30 ☺	14.2	9 ☺	166.6	57 ☺	9.0 <	141

KEY: > Instream fish flows that exceed maximums  
 ☺ Instream fish flows and reservoir storages that are within objective ranges  
 < Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average



**Table 5 - Instream Flow General Objectives (in cubic feet per second)\***

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>
Minimum flow out of Lake Tahoe	75	75	75	75	75	75	75	75	75	75	75	75
Preferred flow out of Lake Tahoe	300	300	300	300	250	250	300	300	300	300	250	250
Maximum flow out of Lake Tahoe	600	600	600	600	500	500	600	600	600	600	500	500
Min. flow, Truckee R. below Donner Ck.	100	100	100	100	100	100	100	100	100	100	100	100
Pref. flow, Truckee R. below Donner Ck.	300	300	300	300	250	250	300	300	300	300	250	250
Max. flow, Truckee R. below Donner Ck.	600	600	600	600	500	500	600	600	600	600	500	500
Minimum flow, TruckeeR. below Boca	150	150	150	150	150	150	150	150	150	150	150	150
Preferred flow, Truckee R. below Boca	300	300	300	300	250	250	300	300	300	300	250	250
Maximum flow, Truckee R. below Boca	600	600	600	600	500	500	600	600	600	600	500	500
Minimum flow out of Donner Lake	8	8 <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	8 <sup>1,2</sup>	8 <sup>2</sup>	8 <sup>2</sup>	8 <sup>2</sup>	8 <sup>2</sup>	8
Preferred flow out of Donner Lake <sup>3</sup>	50	50	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	50	50	50	50	10	10
Maximum flow out of Donner Lake	100	100	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	not appl <sup>1</sup>	100	100	100	100	20	20
Minimum flow out of Prosser <sup>4</sup>	25	25	25	25	25	12	12	12	12	12	12	25
Preferred flow out of Prosser	50	50	50	50	35	35	75	75	75	75	30	30
Maximum flow out of Prosser	100	100	100	100	70	70	150	150	150	150	60	60
Minimum flow out of Independence <sup>5</sup>	7	7	7	7	4	4	8	8	8	8	4	4
Preferred flow out of Independence	20	20	20	20	10	10	20	20	20	20	10	10
Maximum flow out of Independence	40	40	40	40	20	20	40	40	40	40	20	20
Preferred flow into Stampede	90	90	90	90	50	50	90	90	90	90	30	30
Minimum flow out of Stampede	45	45	45	45	45	45	45	45	45	45	45	45
Preferred flow out of Stampede	125	125	125	125	100	100	125	125	125	125	100	100
Maximum flow out of Stampede	250	250	250	250	200	200	250	250	250	250	200	200

1. California Dam Safety Requirements preclude storing water in Donner Lake from November 15 to April 15, which preclude the possibility of controlling releases.
2. The minimum-flow objective for Donner Lake during April through August is reduced to 5 cfs or natural inflow, whichever is less, when the lake is projected to have less than 8,000 acre-feet of storage on Labor Day. Exchanges to meet TROA Enhanced Minimum Flows would be reduced similarly to the extent California is able to obtain a waiver for this under TROA Section 9.C.1(c).
3. As stated in TROA Section 9.F.1(a), preferred instream flows out of Donner during a Dry Season may not be specified; consequently, the flows shown here do not apply during a Dry Season.
4. Since physical constraints prevent releases between 12 cfs and 25 cfs, this is the minimum flow until the dam is modified to allow a minimum flow of 16 cfs throughout the year.
5. These releases from Independence Lake are required to the extent specified in TROA Section 9.C.6(a).

\*Developed from Instream Flow Requirements, Truckee River Basin, Lake Tahoe to Nevada (California Department of Fish and Game, 1996)

**Table 6 - Reservoir Storage Objectives (in thousands of acre-feet)**

**Reservoir Storage for Recreation Purposes**

- Minimum storage is an absolute minimum in the sense that recreation opportunities do not exist when storage is lower.
- June through August storage's are inclusive of the Memorial Day and Labor Day holiday weekends.

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>
Minimum Storage in Donner Lake <sup>1</sup>	--	--	--	--	--	--	--	--	6.3	6.3	6.3	--
Preferred Min. Storage in Donner Lake	--	--	--	--	--	--	--	--	8	8	8	--
Minimum Storage in Prosser Creek Res.	--	--	--	--	--	--	--	--	11	11	11	--
Preferred Min. Storage in Prosser Creek Res.	--	--	--	--	--	--	--	--	19	19	19	--
Minimum Storage in Stampede Res.	--	--	--	--	--	--	--	--	62	62	62	--
Preferred Min. Storage in Stampede Res.	--	--	--	--	--	--	--	--	127	127	127	--
Minimum Storage in Boca Res.	--	--	--	--	--	--	--	--	22	22	22	--
Preferred Min. Storage in Boca Res.	--	--	--	--	--	--	--	--	33.5	33.5	33.5	--

**Reservoir Storage Levels to Protect Reservoir Fisheries**

Minimum Fish Storage - Prosser Creek Res.	5	5	5	5	5	5	5	5	5	5	5	5
Minimum Fish Storage - Stampede Res.	15	15	15	15	15	15	15	15	15	15	15	15
Minimum Fish Storage - Boca Res.	10	10	10	10	10	10	10	10	10	10	10	10
Min. Fish Storage in Independence Lake <sup>2</sup>	--	--	--	--	--	--	7.5	7.5	7.5	7.5	--	--

**Other Reservoir Storage Objectives**

Exchanges out of Lake Tahoe may be recommended at appropriate times to help reduce the potential for wave-induced erosion, to increase the available habitat for the Tahoe Yellow Cress, and to help meet water quality objectives for the Truckee River.

<sup>1</sup> Minimum storage specified in the Donner Lake Indenture Agreement (May 3, 1943), below which releases are not permitted

<sup>2</sup> Minimum storage for spawning access to upper Independence Creek for the Independence Lake and Independence Creek population of Lahontan Cutthroat Trout

## **Exhibit E**

### **Selected Elements of the Report to the Negotiators**

*Part 1 – Alternatives Considered and Rejected*

*Part 2 – TROA Components Considered and  
Rejected During Negotiations*

*Part 3 – Computer Analysis of Streamflow  
and Recreational Pool Elements  
Considered for TROA*

## **Exhibit E**

### **Selected Elements of the Report to the Negotiators**

#### *Part 1 – Alternatives Considered and Rejected*

## **Exhibit E: Selected Elements of the Report to the Negotiators**

### **Part 1—ALTERNATIVES CONSIDERED AND REJECTED**

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To assist the negotiators in developing an operating agreement, numerous potential alternatives were evaluated. In one instance, the *Report to the Negotiators*, which is incorporated by reference and summarized below, was prepared to consider the possible effects of five alternatives against a no action alternative. In other studies, an extensive computer simulation effort was completed, which tested the capacity of a variety of streamflow and recreation pool elements to accomplish their intended purposes without infringing on the water rights of others. The results of this computer analysis are summarized at the end of this section.

The alternatives analyzed in the *Report to the Negotiators* were rejected by the negotiators for numerous reasons, but primarily because each alternative would have compromised *Orr Ditch* Decree water rights, and in many cases, would have been inconsistent with P.L. 101-618. A list of components rejected from further consideration in a draft TROA is given in part 2 of this attachment. As formulated, each alternative included mandatory flow or storage requirements and assumed water would be taken to fulfill those requirements without the permission of rightful water rights owners. For example, computer modeling showed the Streamflow Alternative was likely to provide the least amount of water for Truckee Meadows agricultural and M&I water users because the alternative required the release of waters from storage when it was not usually needed for irrigation or M&I and, when released, those waters could not be diverted for other beneficial uses. In another instance, the Recreational Pools Alternative resulted in benefits accruing to uses without water rights (in the form of higher water levels in reservoirs) at the expense of existing, water-righted, downstream demands. A comparison of simulated shortages in water supplies under each of the action alternatives and no action illustrates the potential adverse impacts on M&I and agricultural water rights (table 1).

Such actions were contradictory to P.L. 101-618, including section 205(a)(2), which requires water to be stored and released from Truckee River reservoirs to satisfy the exercise of water rights in conformance with both the *Orr Ditch* and the *Truckee River General Electric* decrees, except for those rights that are voluntarily relinquished. In addition, the possible adverse effects to water resources under each preliminary alternative were unacceptable to one or more of the negotiating parties.

Recognizing that an agreement was not likely to be concluded if mandatory restrictions interfered with the exercise of existing water rights, the negotiators discarded components of the preliminary alternatives when one or more parties determined that water rights would likely be adversely affected. For example, when an alternative to achieve

Table 1: Computer model results showing number of years (out of 97 years) when water supplies were insufficient to meet M&I or agricultural demand under each of the alternatives (abstracted from tables 4.13 – 4.17 of the *Report to the Negotiators*).

	No Action	Basic TROA	Streamflow	Recreational Pools	Threatened & Endangered Species	California Assured Storage
Truckee Meadows M&I	13	14	17	14	15	16
Truckee Meadows Agricultural	7	10	14	11	14	10
California M&I	11	6	28	4	11	11
Newlands Carson Div.	6	6	8	7	7	7
Newlands Truckee Div.	7	8	12	11	9	8

streamflows requested by California Department of Fish and Game (CDFG) was evaluated, and modeling showed that requested flows could only be achieved by releasing stored water adverse to M&I and agricultural water rights in Nevada, the negotiators realized they would have to examine different flows and explore new ways to make water available for this purpose. This, in turn, lead to negotiations on such topics as exchange procedures, priorities for exchanges, accounting, and procedures for mandatory exchanges.

The negotiators did, however, retain aspects of the preliminary alternatives believed to be desirable and that were acceptable to the affected parties. For example, streamflow and recreational pool targets have been incorporated into draft TROA. Additionally, the negotiators incorporated a component of the preliminary California Assured Storage Alternative and agreed that California could store a portion of its unused surface water allocation in Truckee River reservoirs for M&I purposes. These and numerous other features of the preliminary alternatives identified in the *Report to the Negotiators* have been incorporated into the draft agreement.

## A. REPORT

In January 1996, the *Report to the Negotiators* was completed and circulated to all parties participating in TROA negotiations. The document was originally expected to serve as the basis for a draft EIS/EIR for the negotiated settlement. However, during review of the draft document, the TROA EIS/EIR Management Team concluded that numerous issues, whose environmental effects were still indeterminate, were still being negotiated, and it was premature to prepare a draft EIS/EIR. Consequently, the title of the document

was modified, and it was distributed only to the negotiating parties. The purpose of completing the *Report to the Negotiators* was threefold - to provide analytical information requested by the negotiators; to emphasize issues raised during public scoping; and to provide the negotiators with additional information on potential impacts of proposals that were being considered.

The *Report to the Negotiators* included a NEPA-style analysis of five potential project alternatives. Even though numerous issues had yet to be resolved through negotiations at the time the *Report to the Negotiators* was completed, an alternative was created to represent some of the basic components of what was at the time thought to represent a TROA. Further, four additional alternatives were created to consider the predominant issues identified during the public scoping process - streamflow, recreational pools, threatened and endangered species, and storage of California water.

In reviewing the potential alternatives identified in the *Report to the Negotiators*, the negotiators recognized a number of important issues. Foremost among these was that water rights were adversely affected by each of the alternatives: frequently M&I water supplies recognized in the *Orr Ditch* decree. As formulated in the *Report to the Negotiators*, the alternatives would have taken water without the consent of the water right holder and precluded the storage and release of water by operations proposed in the alternatives. The potential Basic TROA Alternative had the least adverse impact on water rights, but it, too, created conditions that were adverse to water rights, and in some cases, did not comply with existing law. Recognizing the need to continue negotiations, the alternatives evaluated in the *Report to the Negotiators* were rejected.

The potential environmental impacts of the possible project alternatives were also evaluated using standard EIS/EIR techniques. Environmental resources in the study area were characterized under current conditions and also as projected to occur in the future without a TROA in place (the No Action Alternative). Future resources were also characterized as they might occur if each of the potential alternatives were in place. The results of these efforts were then compared to determine possible environmental impacts attributable to the alternatives. Potential impacts to water supply in the study area were given special attention through an extensive modeling effort to determine possible differences between the alternatives. A description of each alternative and a brief summary of some of the potential environmental impacts identified in the *Report to the Negotiators* are included below.

## **1. Report - Basic TROA Alternative<sup>1</sup>**

**a. Description.**—This alternative emphasized implementing the requirements of the PSA, i.e., to provide drought relief for Truckee Meadows and enhance spawning flows

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<sup>1</sup> The Basic TROA Alternative represented draft TROA as negotiated as of 1995, and is substantially different from the TROA Alternative evaluated in this final EIS/EIR.

for endangered and threatened fish of Pyramid Lake. As part of this alternative, the portion of California's surface water allocation not needed to satisfy projected future water rights would remain in the Truckee River to serve downstream water rights. Existing mandatory minimum streamflows would be supplied according to existing procedures, and credit water stored pursuant to PSA could be exchanged to increase the potential for maintaining streamflows. Preferred streamflows were identified as being desirable but not mandatory for fish resources, and so were merely identified as targets for the Administrator. In addition, storage and releases of credit water could be exchanged between reservoirs to achieve non-mandatory recreational pool storage targets.

***b. Environmental Impact Summary.***—The Basic TROA Alternative was expected to increase the average volume of water stored in Lake Tahoe, as well as Prosser Creek, Stampede, and Boca Reservoirs. In addition, average flow in the Truckee River during the cui-ui spawning period was higher than conditions without a TROA in place. Although none of the alternatives improved water quality conditions in the Truckee River substantially, overall water quality was best under the Basic TROA and the Threatened and Endangered Species Alternative.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than it was under the No Action Alternative. In contrast, California M&I water supplies were higher than under the No Action Alternative. Agricultural water supplies available to the Truckee Meadows and Carson Division were reduced under the Basic TROA Alternative. Truckee Division agricultural water supplies were the same as under the No Action Alternative.

The Basic TROA Alternative was anticipated to result in little change to conditions affecting biological resources in the study area from those projected for the No Action Alternative. In comparison to the other alternatives, the Basic TROA Alternative created the least favorable conditions the coldwater fish of Pyramid Lake.

Further, this alternative would reduce fall spawning by fish species found in Donner Creek, Independence Creek, Little Truckee River downstream from Stampede Reservoir, and the Truckee River because preferred and minimum streamflows would be met less often during fall months. In contrast, preferred and minimum streamflows were projected to be met much more frequently during the spring months, and spring-spawning fish species in all the streams and tributaries would benefit as a consequence. Riparian habitat in the study area would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The Basic TROA Alternative created more favorable conditions for cui-ui, bald eagles, osprey, and white pelicans than were anticipated under the No Action Alternative, but it appeared to restrict access of spawning LCT to Independence Creek during drought conditions.



The Basic TROA Alternative produced negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income increased slightly in the study area, but no changes to population or air quality conditions in the study area occurred beyond those projected for the No Action Alternative.

## **2. Report-Streamflow Alternative**

**a. Description.**—The Streamflow Alternative established mandatory minimum and preferred streamflows as identified by CDFG. The mandatory minimum flows were higher than existing minimum flows. By emphasizing streamflows, this alternative responded to issues raised during scoping regarding general well-being of fish and wildlife, stream-based recreation, and water quality in the Truckee River. The alternative also responded to certain endangered species concerns by making spawning flows available for cui-ui.

The reservoirs would be operated to provide those mandatory streamflows by releasing all categories of water (pooled, fish, credit, and privately owned water). No storage credit would be provided to compensate for pooled water released. California's excess surface water—the portion of California's 10,000-acre-foot allocation not used to satisfy existing water rights—would be stored as Secondary Stored Water (referred to as Other Credit Water in TROA) and released to help maintain mandatory streamflows.

**b. Environmental Impact Summary.**—Model results showed the Streamflow Alternative increased flows in the Truckee River, particularly during the summer months when flows are usually lowest. To sustain higher Truckee River flows, less water was stored in the upstream reservoirs. Average storage volumes for Lake Tahoe, Donner Lake, Independence Lake, Prosser Creek Reservoir, Stampede Reservoir, and Boca Reservoir were lower for this alternative than for any other alternative. In comparison to the other alternatives, environmental analysis indicated that the Streamflow Alternative produced the best water quality conditions for Pyramid Lake.

California M&I water supplies and water supply for M&I use in the Truckee Meadows were lower under this alternative than under the No Action Alternative. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Streamflow Alternative.

Since this alternative maintained less water in upstream lakes and reservoirs, it provided the least favorable conditions for biological resources at all the lakes and reservoirs except Pyramid Lake. Higher inflows to Pyramid Lake were expected to produce a greater quality and higher quantity of habitat for the coldwater fishery in the lake. At the other lakes and reservoirs, lower water levels were expected to reduce fish spawning success and survival and adversely affect waterfowl access to foraging habitat.

Populations of fall-spawning fish species in Donner Creek and the Truckee River were expected to be reduced because preferred and minimum streamflows were met less often during fall months in those tributaries. Conversely, fall-spawning fish populations in Independence Creek, Little Truckee River, and Prosser Creek were projected to increase because preferred and minimum streamflows were met more frequently.

The Streamflow Alternative created the best streamflow conditions for spring-spawning fish species in the upstream tributaries and the Truckee River, and populations of those species were expected to increase. Riparian habitat in the study area would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

Due to its high potential to maintain or recover the cottonwood riparian forest downstream from Derby Diversion Dam, the Streamflow Alternative would provide benefits to a number of endangered, threatened, or sensitive bird species. It did not improve conditions for cui-ui as well as the No Action Alternative, and it appeared to create the least favorable conditions at upstream lakes and reservoirs for eagles and osprey.

The Streamflow Alternative was projected to have some minor adverse impacts on recreational expenditures due to lower water levels in the lakes and reservoirs. Impacts to agricultural activities, employment, and personal income in the study area were minor, and cultural resources, population, and air quality conditions were similar to those for the No Action Alternative.

### **3. Report-Recreational Pools Alternative**

*a. Description.*—The Recreational Pools Alternative was formulated to respond to the issue of lake- and reservoir-based recreation. It created mandatory storage targets for the Truckee River reservoirs from May through August with the intent of enhancing recreational opportunities during the recreation season. To achieve the mandatory reservoir storage targets, the alternative would limit all releases from storage or natural inflow any time storage was less than or equal to the established target.

*b. Environmental Impact Summary.*—This alternative was expected to create higher water elevation in Stampede, Boca, and Prosser Reservoirs throughout the year, particularly during the summer recreation season. Correspondingly, the volume of water stored in Lake Tahoe, Donner Lake, and Independence Lake was reduced compared to other alternatives. Truckee River flows were higher in the spring months during cui-ui spawning but lower during the other seasons.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. By contrast, California M&I water supplies were higher. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Streamflow Alternative.

The Recreational Pools Alternative was expected to provide benefits to most biological resources, particularly during the summer months when water elevations were higher to serve recreational interests. In comparison to the No Action Alternative, this alternative provided more favorable conditions for algae, aquatic invertebrates, fish, and waterfowl resources at most lakes and reservoirs in the study area.

Populations of fall-spawning fish species were expected to increase in Independence Creek, the Little Truckee River, and Prosser Creek because preferred and minimum streamflows would be met more frequently during fall months in those tributaries. However, populations of those same fish species were expected to be reduced in Donner Creek and the Truckee River because preferred and minimum streamflows were not anticipated to be met as frequently.

Preferred and minimum streamflows were projected to be met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries would benefit as a consequence. Riparian habitat in the study area would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on associated biological resources.

The Recreational Pools Alternative created less favorable conditions for cui-ui than the No Action Alternative, restricted access to Independence Creek for spawning LCT during drought conditions, and created the least favorable conditions for the white pelican. Of all the alternatives, this alternative created the most favorable conditions for bald eagles and osprey at Stampede and Boca Reservoirs.

The Recreational Pools Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income increased slightly in the study area, but population and air quality conditions in the study area were similar to those for the No Action Alternative.

#### **4. Report-Threatened and Endangered Species Alternative**

*a. Description.*—This alternative was designed to respond primarily to the issue of endangered and threatened fish species of Pyramid Lake. It established mandatory minimum streamflow requirements that were greater than existing minimum streamflow requirements in order to provide higher flows in the lower Truckee River during the spawning season. To achieve the desired flow targets, all categories of water could be released and exchanged irrespective of whether they could be re-stored or protected from depletion.

*b. Environmental Impact Summary.*—Model results indicated that flow in the Truckee River during the spring months for the Threatened and Endangered Species

Alternative was substantially higher than for other alternatives. Average storage at Stampede, Boca, and Prosser Reservoirs was greater, while average storage at Donner and Independence Lakes was lower. Storage at Lake Tahoe was higher in the fall and winter months, but lower in the spring and summer. As noted earlier, the Basic TROA and Threatened and Endangered Species Alternatives appear to produce the best overall water quality conditions.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. California M&I water supplies were similar to those of the No Action Alternative. Agricultural water supplies available to the Truckee Meadows and Carson Division were also reduced in the Streamflow Alternative. Truckee Division agricultural water supplies were similar to those of the No Action Alternative.

This alternative was expected to produce higher flows in the lower Truckee River to respond to the requirements of listed fish species of Pyramid Lake, to the general benefit of biological resources in the lake. In addition, higher water elevations in several lakes and reservoirs would increase the aquatic food base and fish reproductive success compared to the No Action Alternative. Draw downs at these reservoirs were anticipated to occur less frequently than under the No Action Alternative, providing much better foraging and habitat conditions for aquatic resources.

Populations of fall-spawning fish species would be reduced in Donner Creek, Independence Creek, and the Truckee River because preferred and minimum streamflows were projected to be met less often during the fall months in these streams. Populations of these same fish species in Prosser Creek were expected to increase because preferred and minimum streamflows would be met in the creek during fall months.

Preferred and minimum streamflows were met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries would increase as a consequence. Riparian habitat in the study area was projected to be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The Endangered and Threatened Species Alternative created favorable conditions for cui-ui second only to those expected under the California Assured Storage Alternative. However, it created less favorable conditions for LCT, bald eagles and osprey at Independence Lake, and the white pelican.

The Endangered and Threatened Species Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income in the study area increased slightly, but population and air quality conditions in the study area were similar to the No Action Alternative.

## 5. Report-California Assured Storage Alternative

**a. Description.**—The California Assured Storage Alternative was the State's preliminary proposal to maintain 50,000 acre-feet of carryover storage to serve beneficial uses in California. The State could store as much as 8,800 acre-feet each year in Prosser Creek and Stampede Reservoirs, and any unused portion of that storage could carry over from year to year. Total maximum carryover was set at 50,000 acre-feet.

**b. Environmental Impact Summary.**—Based on model results, average storage at Lake Tahoe and Stampede, Prosser Creek, and Boca Reservoirs was higher, and average storage in Donner and Independence Lakes was projected to be lower compared to the No Action Alternative. Spring flows in the Truckee River were higher than any of the other alternatives considered in the *Report to the Negotiators*.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. In contrast, California M&I water supplies were higher. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Streamflow Alternative.

With more water projected in most of the lakes and reservoirs in the study area, conditions affecting biological resources at the lakes and reservoirs were enhanced - the aquatic food base, reproductive success for fish, and foraging habitat for waterfowl were improved compared to the No Action Alternative.

Populations of fall-spawning fish species in Donner Creek, Independence Creek, the Little Truckee River, and the Truckee River were reduced because preferred and minimum streamflows were met less often in these streams during the fall months. Only in Prosser Creek were populations of these same fish species increased, as preferred and minimum streamflows were anticipated to be met in the creek during the fall months.

Preferred and minimum streamflows were met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries were expected to increase. Riparian habitat in the study area was inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The California Assured Storage Alternative created the most favorable conditions for all of all the alternatives considered in the *Report to the Negotiators*. It also created better conditions for a number of sensitive bird species than under the No Action Alternative.

The California Assured Storage Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income in the study area increased slightly, but population and air quality conditions were similar to those for the No Action Alternative.

## **B. OTHER STUDIES**

Following distribution and review of the *Report to the Negotiators*, a number of potential elements were identified that warranted consideration for inclusion into the TROA. These elements focused on maintaining minimum streamflows that were higher than existing minimum flows and maintaining minimum recreation pools in the Truckee River reservoirs. To gain an understanding of how these elements and their variations might affect the exercise of water rights, a technical team completed an extensive computer simulation and analysis effort. The team divided this effort into three tasks:

Develop a list of elements that could enhance streamflows or recreational pools.

Review the list of flow- and pool-exchanging elements and dismiss those that would obviously violate the requirements of Section 205(a)(2) of P.L. 101-618.

Evaluate those elements not dismissed.

More than 100 computer simulations were produced. Results of the simulations were provided to the negotiators for consideration and incorporation into the proposed TROA as they determined appropriate.

The technical team concluded that simply setting higher minimum streamflows, as in the *Report to the Negotiators*, would not achieve the desired results because: (1) water rights would be adversely affected and (2) higher minimum flows would cause too much water to be released during dry periods in some reaches, which would occasionally drop flows to zero as reservoir storage was exhausted. Through analyses of computer simulations, the technical team determined that creating and storing Joint Program Fish Credit Water and exchanging TROA water categories (e.g., Fish Credit Water and Non-Firm M&I Credit Water) among reservoirs could provide substantial benefits for stream- and reservoir-dependent resources by increasing the frequency at which minimum streamflows and recreation pools would be achieved. This led to the development of two sets (tiers) of minimum streamflows that promoted higher minimum streamflows than those that currently exist during wet and normal water years and conservation of M&I water during droughts. The two-tier flow system would be implemented by exchanging or restoring TROA waters among the reservoirs to supply, to the extent possible, the difference between the higher minimum flows and those that currently exist when those higher flows were not already being achieved. In addition, Sierra Pacific and the United States would voluntarily relinquish their rights to restore some of their water to meet the higher minimums under certain conditions. These exchanges and re-storage also increased the frequency of maintaining minimum recreational pools in Prosser Creek, Boca, and Stampede Reservoirs. A detailed description of the computer analysis is provided in part 3 of this attachment.

## **Exhibit E**

### **Selected Elements of the Report to the Negotiators**

#### *Part 2 – TROA Components Considered and Rejected During Negotiations*

## **Exhibit E: Selected Elements of the Report to the Negotiators**

### **Part 2 – TROA COMPONENTS CONSIDERED AND REJECTED DURING NEGOTIATIONS**

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The following potential components of a TROA were considered by the negotiators and were rejected as being adverse to water rights or non-negotiable by one or more of the negotiating parties:

- Operate Truckee River reservoirs solely for maintaining streamflows
  - Maintaining minimum streamflows that are higher than those that currently exist, including between hydroelectric diversion and return points, for recreation, fish and wildlife resources, water quality, or aesthetics
  - Maintain constant flows (greater than current minimum streamflows) in the Truckee River Basin for lengthy time periods
  - Maintain optimum flows during average or greater water years
  - Meet spawning flow requirements for cui-ui
- Remove institutional constraints, such as the 1935 Truckee River Agreement
- Restrict the rate at which reservoir releases could be changed (increased or decreased)
  - Establish maximum release rates for Truckee River reservoirs
  - Establish maximum rates at which reservoir releases may be changed
- Release Credit, Other Credit Water, Private Water, Floriston Rate Water or Project Water solely for maintaining optimum streamflows, whether or not such releases could be exchanged for a similar release from another reservoir or re-stored downstream



- Restrict reservoir releases so that they do not cause streamflows to be greater than double the optimum streamflow
- Maximize the storage of Fish Credit Water in Stampede Reservoir by reducing the storage of Sierra Pacific M&I Credit Water
- Maintain access for Lahontan cutthroat trout to spawning habitat in Independence Creek by substituting storage release from Lake Tahoe for releases from Independence Lake to prevent water storage in Independence Lake from dropping below 7,500 acre-feet from May through July
- Distribute storage of PSA waters proportionally among the reservoirs to increase recreational opportunities at Truckee River reservoirs
- When water level in Independence Lake would be below the dam's release outlet, maintain minimum streamflows in Independence Creek by pumping water from storage
- Maintain the recreational value of Truckee River reservoirs by prohibiting releases below a certain level during the summer months
- Maintain the recreational value of Prosser Creek Reservoir by not releasing Prosser Project Water until after Labor Day
- Increase the M&I drought relief supply for Reno/Sparks by:
  - Establishing release schedules and exchange criteria for other waters
  - Maximizing M&I Credit Water storage in Stampede Reservoir
- Store California's surface water allocation (in excess of direct diversions) adverse to the storage of PSA waters and Floriston Rate Water

The following potential components of a TROA were considered by the negotiators and were rejected as being beyond the purpose and scope of TROA as directed by P.L. 101-618:

- Acquire water rights to maintain streamflows during drought conditions

- Use *Orr Ditch* Decree Claim Numbers 1 and 2 (agricultural irrigation claims) for cui-ui spawning
- Use Newlands Project water rights acquired for the maintenance of wetlands at Stillwater National Wildlife Refuge for the conservation of cui-ui
- Supplement fish populations in the Truckee River Basin with hatchery-reared fish
- Restore fish habitat in the Truckee River Basin degraded by constructing dams
- Maintain greater Donner Creek flows in the reach between Donner Lake dam and the confluence with Cold Creek by measuring flow immediately downstream from the dam
- Increase reservoir storage for recreation and fish and wildlife resources by increasing the storage conservation pools in Truckee River reservoirs
- Improve water quality in the Truckee River by decreasing the contaminant load and concentration of sewage treatment plant discharge
- Improve water quality in the Truckee River by applying sewage treatment plant effluent to land
- Use artificial means to improve dissolved oxygen levels in the Truckee River
- Increase the M&I drought relief supply for Reno/Sparks by:
  - Dedicating more water from the Truckee River to M&I use
  - Constructing Dog Valley Reservoir or other new reservoirs
  - Increasing water conservation beyond that required by PSA (Water Conservation Plan)
  - Eliminating mandatory minimum streamflows in Truckee River Basin tributaries
  - Pumping Lake Tahoe or Independence Lake

- Removing all restrictions in the use of Private Water
- Importing water from other drainages
- Imposing greater conservation measures on agricultural activities
- Pumping groundwater from gravel pits near the Truckee River
- Restricting growth in the Reno/Sparks area
- Transporting water from Alaska by pipeline or tow ice bergs to nearby pumping areas
- Eliminating water deliveries to the Newlands Project
- Increase the water supply for threatened and endangered fishes of Pyramid Lake by:
  - Modifying Operating Criteria and Procedures for the Newlands Project
  - Lining water delivery canals in the Newlands Project
  - Allowing conjunctive use of surface and groundwater
- Modify Lake Tahoe storage and release operations as the channel configuration of the Truckee River changes
- Use Truckee River water recouped from amounts previously over diverted to the Newlands Project to improve and maintain streamflow conditions throughout the Truckee River Basin
- Re-draft the contract governing the use of Donner Lake storage to make more water available for streamflow maintenance
- Modify Lake Tahoe's storage limits to allow for more water to be available for stream maintenance

The following potential component of a TROA was considered by the negotiators and rejected as not allowing flexible reservoir management and conjunctive use of water:

- Use Prosser Project Water in Prosser Creek Reservoir for cui-ui before using water from Stampede Reservoir

The following potential components of a TROA were considered by the negotiators and rejected because the negotiators could not reach agreement:

- Increase streamflows to enhance recreation, fish and wildlife resources, and water quality by storing some of the water scheduled for late summer delivery to the Newlands Project in Truckee River reservoirs
- Use Lake Tahoe “Federal water” described in the 1935 Truckee River Agreement for the benefit of threatened and endangered fishes in Pyramid Lake

## **Exhibit E**

### **Selected Elements of the Report to the Negotiators**

*Part 3 – Computer Analysis of Streamflow  
and Recreational Pool Elements  
Considered for TROA*

## **Exhibit E: Selected Elements of the Report to the Negotiators**

### **Part 3—COMPUTER ANALYSIS OF STREAMFLOW AND RECREATIONAL POOL ELEMENTS CONSIDERED FOR TROA**

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To assist TROA negotiators in developing the operating agreement identified in Section 205(a) of P.L. 101-618, a technical team tested the capacity of potential elements of a TROA to accomplish intended purposes without interfering with the exercise of water rights (unless voluntarily relinquished) and implementation of the Preliminary Settlement Agreement. One of the team's primary tasks was to explore ways to maximize the frequency of achieving minimum stream flow for fish and wildlife that California Department of Fish and Game (CDFG) recently recommended (greater than the minimum stream flows requirements that currently exist) and minimum recreational pools in the Truckee River reservoirs (includes federal reservoirs along with Donner Lake and Independence Lake). The team divided the task into three actions: (1) develop a list of elements that could enhance stream flows and recreational pools; (2) review the list and dismiss elements that would obviously violate there requirements of Section 205(a)(2) of P.L. 101-618; and (3) use computer simulations to evaluate those elements not dismissed above. The team then provided its analyses to the negotiators for discussion and incorporation into the proposed operating agreement as they determined appropriate. The following is an overview of the results provided to the negotiators.

#### **A. ELEMENTS DISMISSED**

After a general review of the elements list, the technical team eliminated the following from further consideration because they would have violated existing water rights if implemented or were deemed non-negotiable by the TROA negotiators:

1. Operating Truckee River Reservoirs only for maintaining stream flows
2. Removing institutional constraints, such as the 1935 Truckee River Agreement
3. Restricting the rate at which reservoir releases could be changed (increased or decreased)
4. Releasing Credit Water, Private Water, Pooled, or Project Waters solely for maintaining optimum stream flows for fish and wildlife, whether or not such releases could be exchanged for a similar release from another reservoir or re-stored downstream
5. Restricting reservoir releases when downstream flows exceed twice the optimum stream flows for fish and wildlife

## **1. Approach**

More than 100 computer simulations were generated in these analyses using the same hydrological model and 1901-95 hydrologic data base as in Chapters 3 and 4 of the Draft Environmental Impact Statement/Environmental Impact Report for the Truckee River Operating Agreement, February 1998. Each simulation included monthly flows at eight sites (primarily reservoir releases), water storage in six reservoirs, and the amount of water available in nine water categories. Since the Nevada Public Service Commission requires Sierra Pacific Power Company (Sierra) to have sufficient M&I water reserves to supply the Truckee Meadows service area during an extended drought, impacts to its water supply were simulated with 1901-94 hydrologic data followed by a repeat of the 1987 and 1988 water years, the first years of the recent eight-year drought (hereafter referred to as the 96-year period). The last year of the 96-year period was used as an “indicator year” for the worst case situation for M&I storage.

While these analyses characterized the No Action Alternative the same as in Chapter 3 (DEIS/EIR, February 1998), they varied those elements (storage, release, and exchange) of the TROA Alternative in Chapters 3 and 4 (DEIS/EIR, February 1998) for using different water categories, including Joint Program Fish Credit Water, to achieve various minimum stream flows regimes and minimum recreational pools. These minimum stream flow regimes, minimum recreation pools, and variations in exchanging and re-storing Power Company M&I Credit, Fish Credit Water, Joint Program Fish Credit Water, Floriston Rate Water, Fish Water, Private Water, and Other Credit Water were evaluated in various combinations to identify impacts to stream flows, Sierra’s M&I water, and irrigation water available to the Carson Division of the Newlands Project.

The various water categories were evaluated for their capacity to support the following purposes:

- Maintaining current minimum stream flows, even if such releases cannot be exchanged or re-stored
- Maintaining minimum stream flows greater than those that currently exist, even if such releases cannot be exchanged or re-stored
- Maintaining the difference between current minimum stream flows and those that are larger, but only if such releases can be exchanged or re-stored
- Maintaining the difference between current minimum stream flows and those that are larger, whether or not they can be exchanged or re-stored
- Used as the last water category for maintaining minimum stream flows

- Maintaining preferred stream flows only
- Maintaining minimum recreational pools for Truckee River Reservoirs

CDFG's preferred stream flow regime, as used in Chapters 3 and 4 (DEIS/EIR, February 1998), was also used in these analyses. It is a set of continuous flows considered optimum for selected reaches of the Truckee River and its tributaries. Since it is usually not possible to achieve these stream flows without adversely affecting water rights, the computer simulations maintained the flow nearest the CDFG preferred flow regime (must be greater than mandatory minimum flow) that could be maintained for several months by adjusting scheduled releases (usually by extending the release period) and exchanging water among reservoirs without interfering with water rights.

A number of minimum stream flow regimes were tested in these analyses by comparing the frequency that stream flows recently recommended by CDFG were achieved or exceeded (tables 1 and 2). The current minimum flow regime contains mandatory reservoir releases currently required for certain reservoirs. Since these releases are usually not adequate for supporting self-sustaining fish populations in selected stream reaches, CDFG recently recommended a new set of minimum stream flows (hereafter referred to as CDFG minimum flow regime) that are greater than those that currently exist. The technical team developed a two-tier set of minimum stream flows (two-tier minimum flow regime) to provide greater flexibility for water management and to reduce adverse effects to water rights. This regime is comprised of two sets of minimum stream flows: During "non-dry water years" CDFG minimum flow regime is implemented, while during "dry water years", stream flow targets in CDFG minimum flow regime are reduced by half. The two-tier minimum flow regime was modified further (variations A and B) to allow greater flexibility in reservoir operations.

These analyses tested two sets of minimum recreational pool requirements for Donner Lake, and Prosser Creek, Boca, and Stampede Reservoirs from June through August. The first set only used the minimums associated with priority 1 given in table 3; these were targets, not mandatory limits. The second set used the minimums associated with all three priorities and established criteria for applying them. It emphasized maintaining priority 1 minimums for all four reservoirs. If these levels could not be maintained, storage was released from Stampede in lieu of releases from Prosser or Boca so that minimum pools could be maintained at priority 2 levels. If Stampede storage declined to 65,000 acre-feet, releases were made from Prosser and Boca until priority 3 levels were reached. Priority 3 minimums could not be violated unless releases were required to achieve minimum stream flows.

Use of water categories to support these minimum pools through exchanges and re-storage were evaluated by comparing computer simulations of frequency of achieving or exceeding minimum pools, Sierra's M&I shortage at the end of the 96-year period of analysis, and average annual shortage to the Carson Division of the Newlands Project.



Table 1.—Instream flow regimes (cfs)

	CDFG preferred	Current minimum	CDFG minimum	Two-tier	
				CDFG minimum	50% of CDFG minimum
Truckee River Tahoe to Donner	250	50-70	75	75	37.5
Truckee River Donner to Little Truckee River	300	0	100	100	50
Truckee River Little Truckee River to Stateline	200	0	150	150	75
Donner Lake release <sup>1</sup>	10-50	2-3	<sup>2</sup> 8	8	4
Prosser Creek Reservoir release	30-75	5	16	16	8
Independence Lake release	10-20	2	4-8	4-8	2-4
Stampede Reservoir release	100-125	30	45	45	23

<sup>1</sup> From November 15 through April 15, the gates of the dam are held open; therefore, inflow to the lake determines the outflow at the dam, and there is no required flow.

<sup>2</sup> Minimum release from Donner Lake from April through August becomes 5 cfs if the lake is forecasted to contain less than 8,000 acre-feet of water on September 1.

Two sets of comparisons were made: (1) using Joint Program Fish Credit Water as the last water to be used for minimum stream flows versus using such water to maintain minimum recreational pools and readily moving it among the reservoirs as necessary; and (2) using different combinations of the water categories to maintain minimum recreational pools and readily moving it among the reservoirs as necessary (as long as minimum stream flows were maintained and CDFG preferred flow regime was not exceeded) (table 4). Each simulation used variation B of the two-tier minimum flow regime.

## 2. Results of Streamflow Analysis

*a. Minimum Streamflows.*—Use of the current minimum flow regime with the No Action Alternative yielded varied results for reservoir releases achieving/exceeding CDFG's minimum stream flow recommendations (as shown in CDFG minimum flow regime) during the period of analysis (table 5). Releases from Prosser Creek Reservoir achieved or exceeded the recommendation at least 75 percent of the time, while releases from Lake Tahoe, Donner Lake, Independence Lake, and Stampede Reservoir achieved or exceeded the standard about 60-70 percent of the time. The frequency of achievement increased somewhat when the current minimum flow regime was used with TROA. CDFG recommended minimum stream flows were achieved or exceeded more frequently downstream from Donner Lake and Independence Lake. Achievement of flows was greatest when the

Table 2.—Variations of two-tier minimum instream flow regime

	A	B
Truckee River Lake Tahoe to Donner Creek confluence	<ul style="list-style-type: none"> <li>– Normal year: CDFG minimum flows</li> <li>– Dry year: 50% CDFG minimum flows</li> <li>– TROA waters provide amount not achieved with Pooled Water, but must be exchanged</li> </ul>	<ul style="list-style-type: none"> <li>– Normal year: CDFG minimum flows</li> <li>– Dry year: 50% CDFG minimum flows</li> <li>– Pooled Water used in accord with Tahoe/Prosser Exchange Agreement (up to 50-70 cfs)</li> <li>– TROA waters provide amount not achieved with Pooled Water, but must be exchanged</li> </ul>
Donner Lake release	<ul style="list-style-type: none"> <li>– Normal year: CDFG minimum flows</li> <li>– Dry year: 50% CDFG minimum flows</li> <li>– POSW provide difference between current minimum and CDFG or 50% CDFG minimums if storage criteria and recreational objectives are not violated and releases are exchanged</li> </ul>	<ul style="list-style-type: none"> <li>– Normal year: CDFG minimum flows</li> <li>– Dry year: 50% CDFG minimum flows</li> <li>– POSW provide difference between current minimum and CDFG or 50% CDFG minimums if storage criteria and recreational objectives are not violated and releases are exchanged</li> </ul>
Prosser Creek Reservoir release	<ul style="list-style-type: none"> <li>– Current minimum provided by release of Pooled and Uncommitted Waters</li> <li>– TROA waters provide difference between current minimum and CDFG or 50% CDFG minimums if releases are exchanged</li> </ul>	<ul style="list-style-type: none"> <li>– Current minimum provided by release of Pooled and Uncommitted Waters</li> <li>– If exchange possible: initially, 3 cfs of Uncommitted Water added during dry years and 5cfs during normal years, afterwards, TROA waters provide difference for a total of 8 cfs during dry years and add 6 cfs during normal years</li> </ul>
Stampede Reservoir release	<ul style="list-style-type: none"> <li>– Pooled Waters and Fish Water provide for current minimum</li> <li>– Normal years: TROA Waters provide difference between current and CDFT minimums</li> <li>– Dry years: TROA Waters used for 22.5 cfs if exchange possible</li> </ul>	<ul style="list-style-type: none"> <li>– Fish Water provides for current minimum</li> <li>– Normal years: Fish and TROA Waters proportionally provide difference between current and CDFG minimums</li> <li>– Dry years: If no Fish Water, TROA Waters used for 22.5 cfs if exchange possible</li> </ul>
Independence Lake release	<ul style="list-style-type: none"> <li>– POSW provides for current minimum</li> <li>– POSW provides for difference between current and CDFG or 50% CDFG minimums if restored after release</li> <li>– Minimum flow is 2 cfs when storage below 7,500 acre-feet</li> </ul>	<ul style="list-style-type: none"> <li>– POSW used to meet CDFG or 50% CDFG minimums – not necessary to restore</li> <li>– Minimum flow is 2 cfs when storage below 7,500 acre-feet</li> </ul>
Boca Reservoir release	<ul style="list-style-type: none"> <li>– No mandatory minimum instream flows</li> </ul>	<ul style="list-style-type: none"> <li>– No mandatory minimum instream flows</li> </ul>
Truckee River Donner Creek to Stateline	<ul style="list-style-type: none"> <li>– No mandatory minimum instream flows</li> </ul>	<ul style="list-style-type: none"> <li>– No mandatory minimum instream flows</li> </ul>

Table 3.—Minimum recreation pools and maintenance priorities

Priority	Reservoir storage (acre-feet)			
	Donner Lake	Prosser Creek	Boca	Stampede
1	8,000	19,000	33,500	127,000
2	8,000	19,000	26,000	65,000
3	6,300	11,000	22,000	62,000

Table 4.—Combinations of water categories tested for maintenance of minimum recreational pools (indicated by "X")

Combinations	Joint program Fish Credit Water	Credit Waters, Secondary Storage Water, and California M&I Water	Fish Water	Pooled Water
1	X			
2	X	X		
3	X	X	X	
4	X	X	X	X

CDFG minimum flow regime was used with TROA. In this case, modification of releases from all five reservoirs had substantial beneficial effects on stream flows. All reservoir releases, except Lake Tahoe, achieved or exceeded the recommendations more than 93 percent of the time during the period of analysis.

Table 5.—Frequency reservoir releases equaled or exceeded CDFG's recommended minimum instream flows

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
No Action Alternative	58	70	75	59	64
TROA with current minimum regime	56	82	82	74	59
TROA with CDFG minimum regime	87	94	97	100	100

The creation of Joint Program Fish Credit Water has the potential to enhance stream flows by providing water to supplement the difference between the current and CDFG minimum flow regimes. This was evident in comparing two situations where only the current minimum flow regime was required but Joint Program Fish Credit Water was available to supplement the difference between current and high minimum flows (table 6). There was little difference between reserving Joint Program Fish Credit Water as the last water to be released and reserving it to supplement other releases relative to achievement of preferred stream flows. Both options appeared to substantially increase the frequency reservoir releases achieved or exceeded CDFG minimum stream flow recommendations.

Table 6.—Frequency reservoir releases achieved or exceed CDFG minimum instream flow recommendations with and without Joint Program Fish Credit Water (JPFCW)

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
– No JPFCW – Current minimum flow regime	56	79	82	74	71
– JPFCW only used for difference between current and CDFG minimum flow regime	68	79	86	74	84
– JPFCW last water released for minimum instream flows – CDFG minimum flow regime	87	94	97	100	100
– JPFCW only used for preferred flow regime – CDFG minimum flow regime	87	94	97	100	100

Application of the two-tier minimum flow regime and its variations greatly improved reservoir releases for stream maintenance in comparison to using the current minimum flow regime, but improvements were somewhat less than using the CDFG minimum flow regime (tables 5, 6, and 7). Two-tier minimum flow regime variations A and B provided nearly the same results as the two-tier minimum flow regime for Donner Lake, Prosser Creek Reservoir, and Stampede Reservoir, but there was a marked difference in the releases from Lake Tahoe and Independence Lake. Since variation A of the two-tier minimum flow regime would not allow releases greater than those of the current minimum flow regime if they could not be re-stored, releases from Independence Lake achieved or exceeded CDFG recommended minimum flows 13 percent less often than with the two-tier minimum flow regime that required such releases. Variation B of the two-tier minimum flow regime yielded the same frequency as the two-tier minimum flow regime because releases to achieve minimum flows were not required to be re-stored. Variation B, however, modified releases from Lake Tahoe so that the minimum flows were achieved or exceeded 11 percent less often than the two-tier minimum flow regime because it replaced the release requirement of the Tahoe/Prosser Exchange Agreement, thus correcting the adverse impact to Floriston Rate Water caused by two-tier minimum flow regime-variation A.

Table 7.—Frequency reservoir releases achieved or exceeded CDFG minimum flow recommendations with the two-tier minimum instream flow regime and variations A and B

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
Two-tier	82	88	91	87	88
Two-tier A	82	87	86	74	88
Two-tier B	73	88	87	86	92

### 3. Water Rights

A basic issue relative to stream flow maintenance concerned changing reservoir operations to give stream flow maintenance, both preferred and CDFG minimum flow regimes, priority over water rights. This water management strategy was tested by comparing simulations of Truckee River reservoirs operated to maintain stream flows as the top priority with simulations that operated the reservoirs primarily to serve water rights, the current operation. The simulations indicated that during extended droughts (1931-35 and 1988-94) the stream flow priority reduced Carson Division and Sierra's M&I supplies by 7 and 25 percent, respectively, compared to water right priority simulation. Because of adverse impacts to water rights, the question of operating reservoirs primarily for stream flow was eliminated from further consideration. All remaining simulations assumed that Truckee River Reservoirs were operated primarily to serve existing water rights.

Minimum flow regimes listed in tables 1 and 2 had markedly different effects on the Carson Division's irrigation supply and Sierra's M&I supply. Only the CDFG minimum flow regime adversely affected water available for the Carson Division. It reduced the average annual irrigation supply by about 3,000 acre-feet during the indicator year (last year of the 96-year period of analysis) as compared to the other three minimum regimes.

As with impacts to the Carson Division, implementation of CDFG minimum flow regime caused the greatest adverse impacts to M&I supply (table 8). By the indicator year of the 96-year period, the CDFG minimum flow regime had eliminated Sierra's storage and caused a shortage where none existed with any of the other flow regimes. This was caused by the release of M&I water to meet the higher flow requirements of the CDFG minimum flow regime. Though the regime required the release of water from all categories in storage, a substantial contribution was required of M&I Credit Water because it was the largest water category located in Stampede Reservoir during an extended drought.

Table 8.—Storage and shortages (acre-feet) in Sierra's M&I water during last year of 96-year period with different instream flow regimes

	Current minimum	CDFG minimum	Two-tier minimum	Two-tier minimum Variation A
Storage	6,920	0	5,690	3,300
Shortage	0	1,380	0	0

Though the two-tier minimum flow regime required greater minimum stream flows during non-dry years than the current minimum flow regime, the reduction in flow requirements during dry years with the two-tier minimum flow regime allowed nearly the same amount of water to remain in storage at the end of a drought as with the current minimum flow regime. This benefit, however, was adverse to Floriston Rate Water

because the two-tier minimum flow regime required more to be released than required by the Tahoe-Prosser Exchange Agreement or to achieve Floriston Rates. This was partly corrected in variation A of the two-tier minimum flow regime by requiring Credit Water to make-up the difference between the current minimum flow regime and the two-tier minimum flow regime-variation A (only if it could be exchanged or re-stored), but at the expensive of Sierra's M&I supplies. Variation A resulted in less M&I storage than with the current and two-tier minimum flow regimes because Credit Water released for minimum flows did not receive sufficient protection from spills and was not always available for its original purpose.

The creation of Joint Program Fish Credit Water caused less Fish Credit Water to be available for maintaining minimum stream flows. As a consequence, more M&I water would have to be released from storage to compensate for the shortfall. The magnitude of this impact on M&I water depended on what Joint Program Fish Credit Water was used for (e.g., preferred or minimum stream flows) and on the minimum stream regime required at the time. For example, at the end of the 96-year period of analysis, 5,220 acre-feet of M&I water was in storage when Joint Program Fish Credit Water was not created, but only 3,370 acre-feet in storage when Joint Program Fish Credit Water was stored and used for making-up the difference between the current minimum flow regime and the CDFG minimum flow regime. This reserve of M&I water was eliminated and a shortage created when the CDFG minimum flow regime was required and Joint Program Fish Credit Water was reserved as either the last water to be used for maintaining minimum stream flows or for supplementing preferred flows. When reserving Joint Program Fish Credit Water as the last to be used for minimum flows, shortage in M&I water increased 600 percent (9,540 acre-feet) over that when Joint Program Fish Credit Water was not created (1,380 acre-feet). Reserving Joint Program Fish Credit Water for preferred stream flow maintenance further aggravated M&I shortage by increasing it 700 percent (11,270 acre-feet) over that when Joint Program Fish Credit Water was not created.

The two-tier minimum flow regime eliminated the adverse effect of Joint Program Fish Credit Water on M&I storage and shortages. With the two-tier minimum flow regime, M&I storage conditions are nearly the same as those without Joint Program Fish Credit Water and the current minimum flow regime. Variation A of the two-tier minimum flow regime, however, only provided about half the storage because M&I Credit Water is relied on more to contribute to minimum flow maintenance.

#### Results of Recreation Pool Analysis

Use of the second set of minimum recreational pools that included all three priorities (in addition to mandatory minimum recreational pools) in table 3 was eliminated from extensive analysis because of the large potential to adversely impact water rights, and threatened and endangered fishes of Pyramid Lake. The first set of minimums (priority 1) was evaluated thoroughly because of its potential benefit to maintain minimum pools.

TROA increased the opportunities for maintaining priority 1 and 3 minimum pools, except for Donner Lake, when compared to the No Action Alternative (table 9). The increases with TROA were due primarily to exchanges and re-storage of waters for minimum stream flows, and attempts to achieve the minimum recreational pool targets. The low frequency associated with Donner Lake is due to higher minimum stream flow requirement in TROA than in the No Action Alternative.

Table 9.—Frequency priority 1 and 3 minimum recreational pools were achieved or exceeded with TROA (variation A of two-tier minimum flow regime) and the No Action Alternative

Reservoirs	Priority 1 minimum pools (acre-feet)	Exceedence frequency (percentage)		Priority 3 minimum pools (acre-feet)	Exceedence frequency (percentage)	
		TROA	No Action Alternative		TROA	No Action Alternative
Donner Lake	8,000	60	75	6,300	85	100
Prosser Creek	19,000	12	12	11,000	58	40
Stampede	127,000	68	53	62,000	55	47
Boca	33,500	22	13	22,000	95	71

The use of Joint Program Fish Credit Water for minimum recreational pools did not increase the frequency of maintaining priority 1 minimum pools when compared to reserving such water as the last to be used for maintaining minimum stream flows (table 10). Using another water category with Joint Program Fish Credit Water slightly increase the frequency, but using more than one additional water category with Joint Program Fish Credit Water did not increase the occurrence.

Table 10.—Frequency priority 1 minimum recreational pools were achieved or exceeded with exchange/re-storage of difference water category combinations (see table 4)

	Priority 1 minimum pools (acre-feet)	Exceedence frequency (percentage)				
		Joint Program Fish Credit Water last used for minimum instream flows	Comb. 1	Comb. 2	Comb. 3	Comb. 4
Donner Lake	8,000	60	60	73	73	73
Prosser Creek	19,000	12	15	22	22	29
Stampede	127,000	68	65	63	63	71
Boca	33,500	22	22	29	29	29

Using Joint Program Fish Credit Water for minimum recreational pools, rather than for minimum stream flows, substantially increased (25 percent) Sierra's M&I storage without markedly increasing (less than one percent) the average annual shortage to the Carson Division (table 11). Dededicating other water categories along with Joint Program Fish Credit Water to minimum recreational pool maintenance noticeably decreased (79-94 percent) Sierra's M&I storage and increased (1-9 percent) Carson Division average annual shortage.

Table 11.—Comparison of Sierra's M&I storage and Carson Division shortage with the exchange/re-storage of difference water category combinations

	<b>Sierra storage (acre-feet)</b>	<b>Carson Division shortages (acre-feet)</b>
Joint Program Fish Credit Water last used for minimum instream flows	3,650	3,760
Combination 1	4,870	3,770
Combination 2	1,020	3,810
Combination 3	180	3,820
Combination 4	990	4,150

#### 4. Summary

Exchanges and re-storage of Credit Waters among the Truckee River reservoirs and the creation of Joint Program Fish Credit Water enhanced the capacity of a TROA to increase the frequency that reservoir releases achieve or exceed CDFG minimum stream recommendations and that minimum recreational pools are maintained. However, adverse impacts to water rights varied appreciably with the different combinations of exchanges, water categories, minimum stream flow regimes, and minimum recreational pools. For example, requiring reservoir releases to be no less than the CDFG minimum flow regime would greatly enhance stream flows, but would be adverse to water rights and recreational pools. Conversely, requiring reservoir releases to be no less than the current minimum flow regime would not substantially enhance stream flows, but would enhance Sierra's M&I supplies and recreational pools. The best scenario incorporating stream flows, recreational pools, and M&I supplies appears to be the two-tier minimum flow regime-variation B, with Joint Program Fish Credit Water used for maintenance of minimum recreational pools. Implementation of this scenario would require the Department of the Interior and Sierra to voluntarily relinquish rights to re-store some of their waters under certain conditions.